FORCEnet
engineering conference
JUNE 28 - 30, 2005 NORFOLK CONVENTION CENTER

Net-Ready Key Performance Parameter (NR KPP)

Mr. Tom Gaetjen
The Joint Staff, J6-I
30 June 05

Sponsored by
SPAWARSYSCOM
FORCEnet Chief Engineer

NR KPP Compliance Statement

Net Ready KPP	Threshold (T)	Objective (O)
Net-Ready: The system must provide survivable, interoperable, and operationally effective information exchanges to execute operational activities in support of Net-Centric military operations.	**The system must support execution of the threshold critical mission threads identified in the system's integrated architecture products (DODAF) and satisfy the technical requirements for Net-Centric military operations to include 1) DISR mandated GIG IT standards identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Services identified in the OV-5, 4) Information assurance requirements including policy-enforcement controls, data correctness, availability, and issuance of an Interim Approval to Operate (IATO) by the Designated Approval Authority (DAA), and 5) Operationally effective system data exchanges; and mission critical performance and information assurance attributes identified in the SV-6.**	**The system must support execution of all mission threads identified in the system's integrated architecture products and satisfy the technical requirements for transition to Net-Centric military operations to include 1) DISR mandated GIG IT standards identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Services identified in the OV-5, 4) Information assurance requirements including policy-enforcement controls, data correctness, availability, and issuance of an Approval to Operate (ATO) by the Designated Approval Authority (DAA), and 5) Operationally effective system data exchanges; and mission critical performance and information assurance attributes identified in the SV-6.**

Net Ready KPP Components

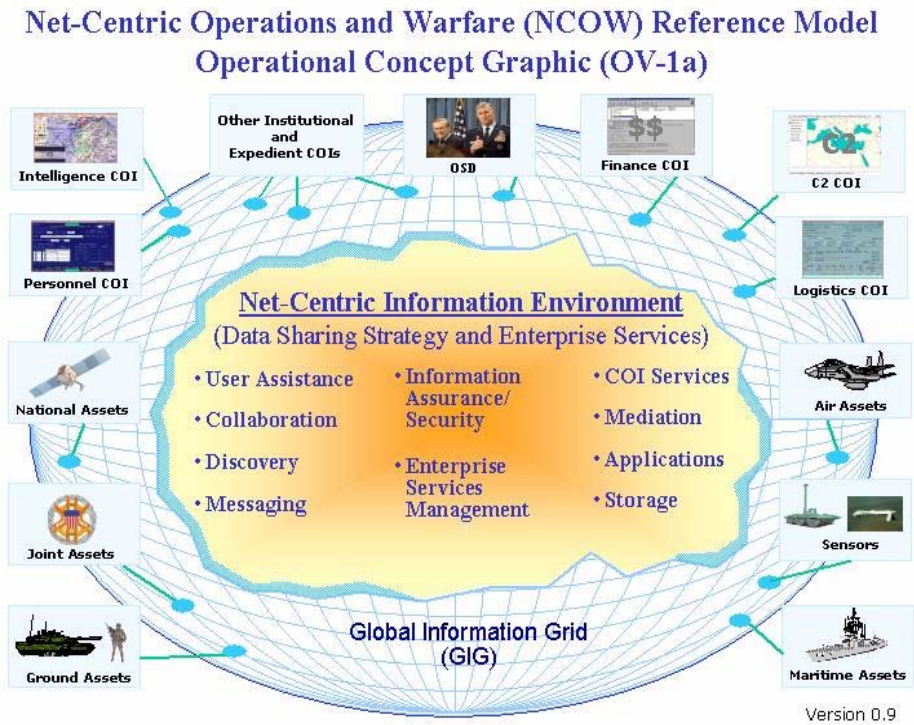
1. Net Centric Operations and Warfare Reference Model (NCOW RM) Compliance
2. Supporting Integrated Architecture Products
3. Key Interface Profiles (KIPs) Compliance
4. Information Assurance (IA) Accreditation

Connects requirements for capabilities to acquisition of capabilities

Net Centric Operations & Warfare Reference Model (NCOW RM) Compliance

NCOW RM Content:

- **Ops Concept Graphics**
- **Integrated Dictionary**
- **Activity Models with Node Trees**
- **Standards Technology Forecast**



- ✓ ***P*rovides common net centric architectural constructs congruent with the DODAF/JTA/DISR.**
- ✓ **Establishes a common language and taxonomy for NCOW concepts.**
- ✓ **Demonstrates and promotes the TPPU Vision – (Task, Post, Process, Use)**
- ✓ **Defines the *core IT standards* required for net-centricity – many web-based: e.g., WSDL, SOAP, UDDI, MPLS, IPv6, IPSP**

NCOW Reference Model
Transition Strategy

FORCEnet engineering conference

Net-centric Constructs

- Language/taxonomy
- Net-centric Enterprise Services Architecture Strategy
- Net-centric Data Strategy
- Net-centric Information Assurance Strategy

Net Centric Operations & Warfare Reference Model (NCOW RM) Compliance

FORCEnet engineering conference

NET-CENTRIC OPERATIONS AND WARFARE REFERENCE MODEL

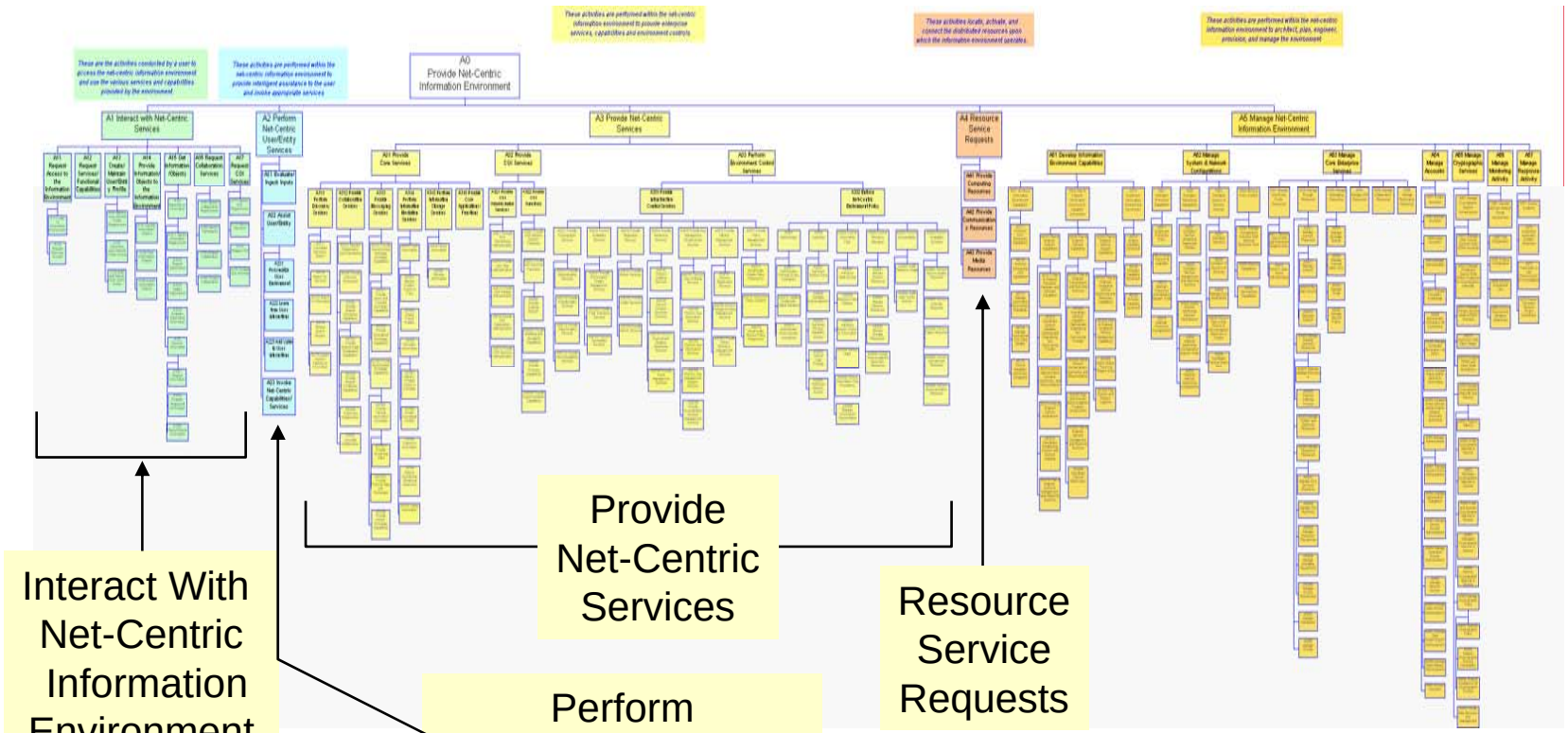
Provide Net-Centric Information Environment

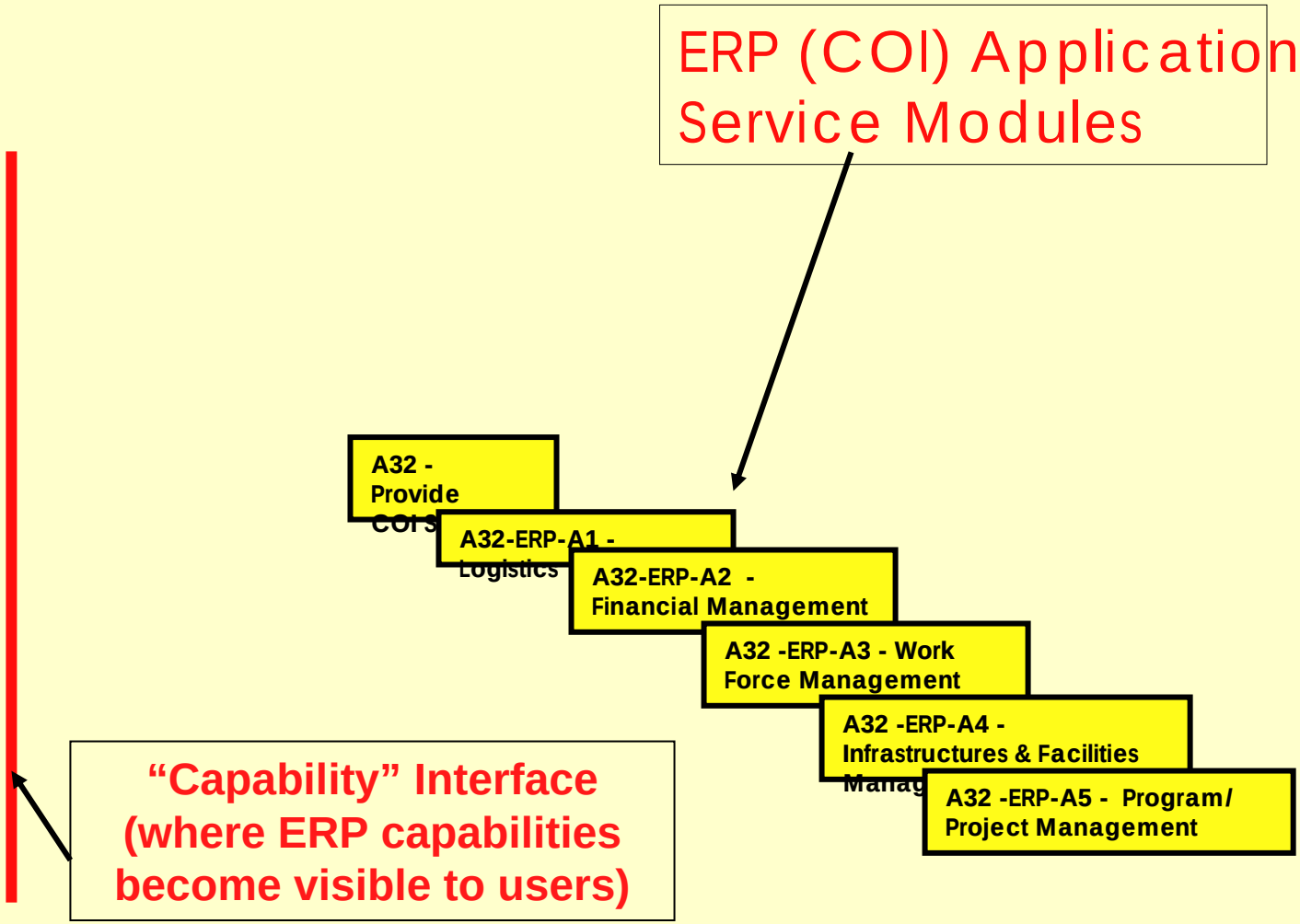
1 **Interact with Net-Centric Information Environment**	2 **Perform Net-Centric User/Entity Services**	3 **Provide Net-Centric Services**	4 **Resource Service Requests**	5 **Manage Net-Centric Information Environment**
Activities conducted by users to access the GIG and use the various services and capabilities provided within the GIG The interface to the GIG employed by all user architectures	Activities are performed within the GIG to invoke appropriate services and provide intelligent assistance to the users	Infrastructure Provided Services and Community of Interest (COI) Supplied Services Activities are performed within the GIG to provide enterprise services, capabilities, and environment controls	Activities conducted to provision infrastructure resources for the requested services Provide resources, I.e., processors, memory, bandwidth, etc.	Management of GIG Capabilities ***including*** Information Transport Activities performed within the GIG to provide management of the Net-Centric Environment

The Standard for Describing Net Centricity

Reference Model Activity Decomposition

"Provide Net-Centric Info Environment"




ERP (COI) Application Service Modules
A32 - Provide COI's
A32-ERP-A1 - Logistics
A32-ERP-A2 - Financial Management
A32 -ERP-A3 - Work Force Management
A32 -ERP-A4 - Infrastructures & Facilities Manag
A32 -ERP-A5 - Program/ Project Management
"Capability" Interface (where ERP capabilities become visible to users)

NCOW RM Compliance

All DoD architectures are expected to comply and conform to the NCOW RM by:

- **Using common NCOW RM definitions and vocabulary**
- **Incorporating the capabilities and services described in the NCOW RM**
- **Incorporating the IT/NSS standards identified in the NCOW RM**

This supports Compliance and conformance with the GIG translates to satisfying the requirements of the following products:

- **DoD Architecture Framework (DoDAF)**
- **DISR**
- **GIG Enterprise Services (GIG ES) Capability Development Document (CDD)**

NCOW REFERENCE MODEL VERSION 1.1
COMPLIANCE ASSESSMENT METHODOLOGY

- Section 8.2 (draft) Acquisition Series Guidebook; Reference Model Methodology
- Review capability and requirements documents, including architectures and architecture products.
- Determine conformance to applicable NCOW Reference Model:
  - Net-Centric Concepts
  - Net-Centric Processes
  - Net-Centric Services
  - Net-Centric Standards
  - Net-Centric Language and Taxonomy
- Provide Assessment Report.

NCOW REFERENCE MODEL VERSION 1.1
COMPLIANCE ASSESSMENT METHODOLOGY

FORCEnet engineering conference

	ARCHITECTURE PRODUCT REVIEW AND ANALYSIS							
NET-CENTRIC ASSESSMENT AREA	**AV-1**	**AV-2**	**OV-1**	**OV-5**	**OV-6C**	**SV-1**	**SV-5**	**TV-1**
Net-Centric Concepts								
Net-Centric Processes								
Net-Centric Services								
Net-Centric Standards								
Net-Centric Language and Taxonomy								

THE GLOBAL INFORMATION GRID
THE DOD ENTERPRISE ARCHITECTURE

FORCEnet engineering conference

NCOW Reference Model

The means and mechanisms to move from the current IT environment to the future Net-Centric environment

Net-Centric Concepts, Language, and Taxonomy

The guide for building Net-Centric architectures in the Department

GIG Architecture Version 1.0

The DoD Baseline IT Architecture

A description of the current IT environment

GIG Architecture Version 2.0

The DoD Objective IT Architecture

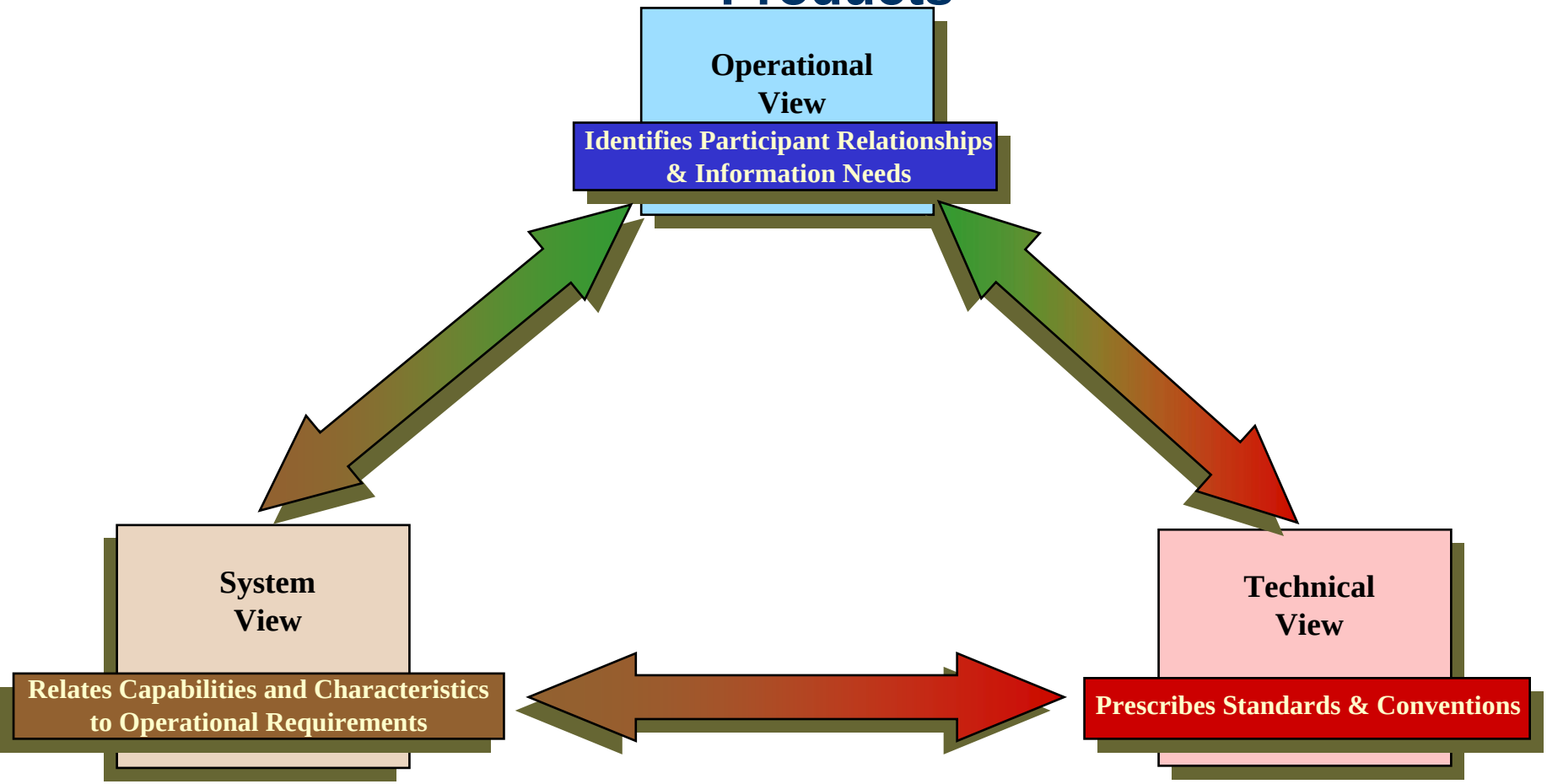
A description of the future Net-Centric environment

NCOW RM Compliance Statement

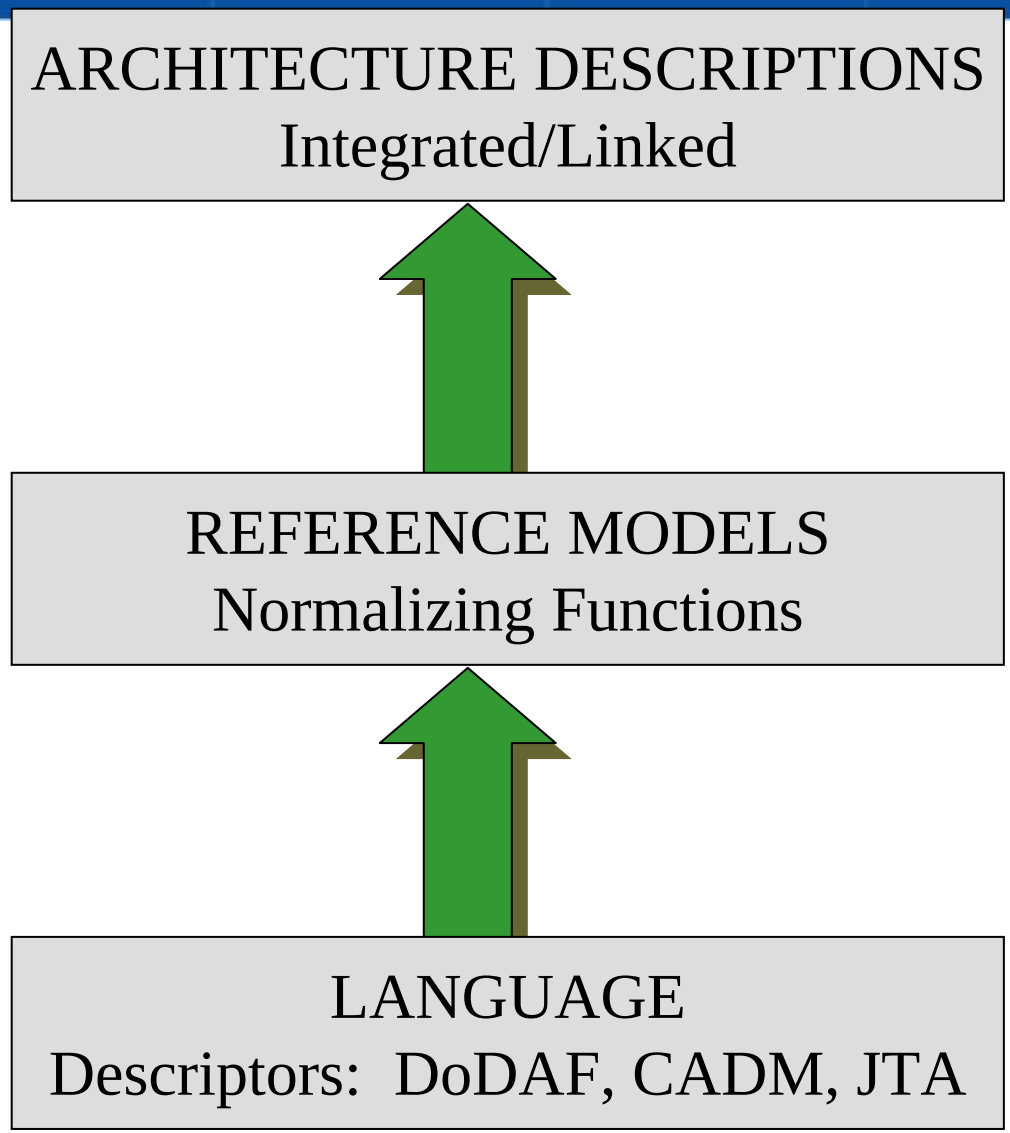
- **IAW CJCSI 6212.01C, this program will comply with the taxonomy and lexicon of NCOW concepts and terms, and architectural descriptions of NCOW concepts. It will also comply with the NCOW RM activities, services and standards required to establish, use, operate, and manage the net-centric enterprise information environment to include: the generic user-interface, the intelligent-assistant capabilities, the net-centric service capabilities (core services, Community of Interest (COI) services, and environment control services), and the enterprise management components.**

Net Ready KPP Components

2. Integrated Architecture Products



Linking Architectures



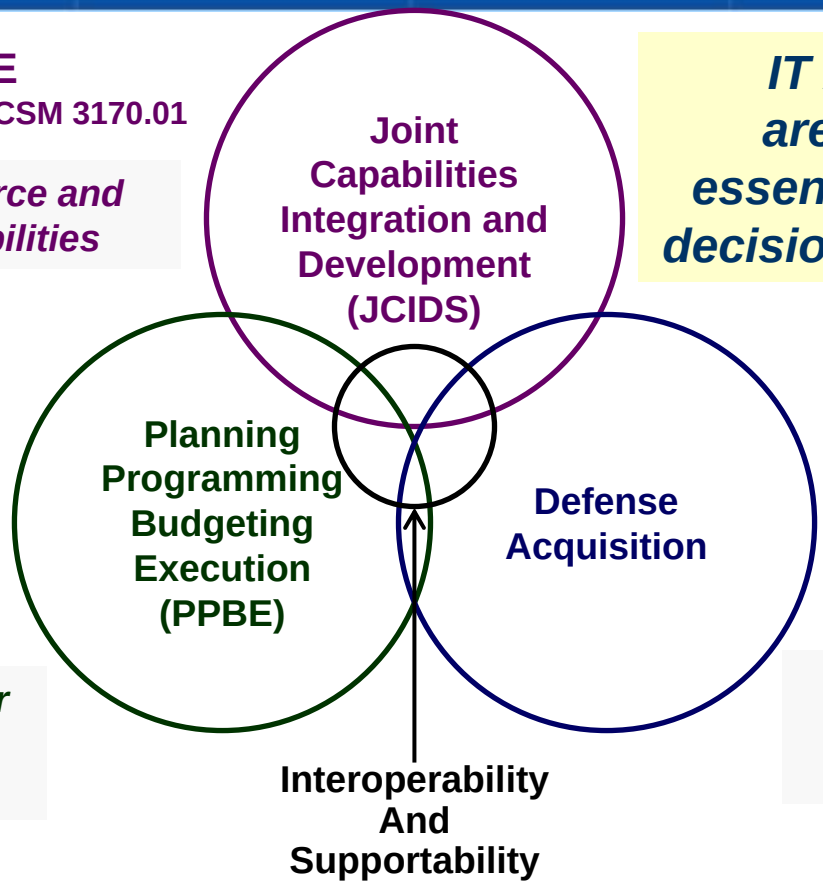
THE GLOBAL INFORMATION GRID
ARCHITECTURES AND DECISION-MAKING PROCESSES

FORCEnet engineering conference

DEFINE
CJCSI 3170.01C, CJCSM 3170.01

Define the Force and Force Capabilities

IT Architectures are required and essential parts of each decision-making process



BUILD
DODD 7045.14, DODI 7045.7

Allocate Resources for the Force and Force Capabilities

BUILD
DODD 5000.1, DODI 5000.2

Acquire and Equip the Force and Force Capabilities

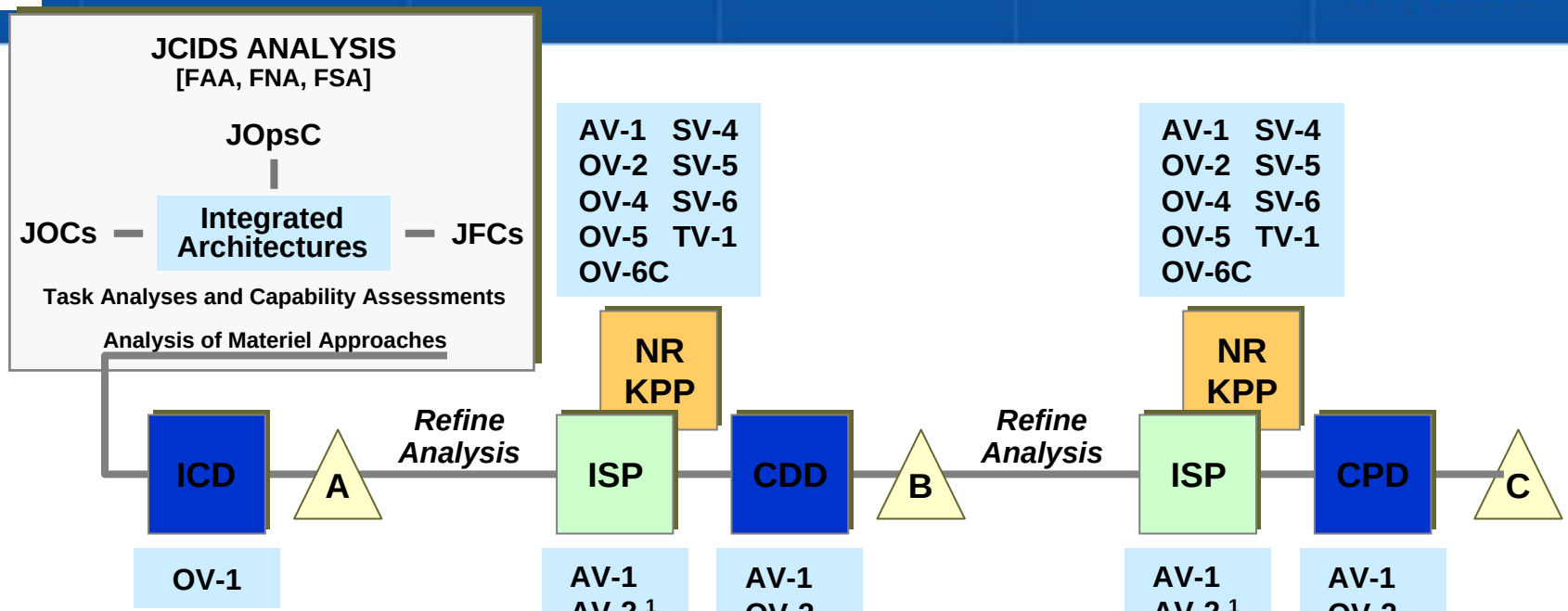
<<Net-centric Assessment Process >>

Assess and Certify System Interoperability

NET
DODD 4630.5, DODI 4630.8, CJCSI 6212.01C

THE GLOBAL INFORMATION GRID
ARCHITECTURES AND DECISION-MAKING PROCESSES

FORCEnet engineering conference



REFERENCES:
DODD 5000.1, DODI 5000.2, DODD 4630.5, DODI 4630.8, CJCSM 3170.01D, CJCSI 3170.01A, CJCSI 6212.01C

NOTES:
1 – Acronym List
2 – Initial IT Standards Profile
3 – Final IT Standards Profile

Where Integrated Architecture "Fits"

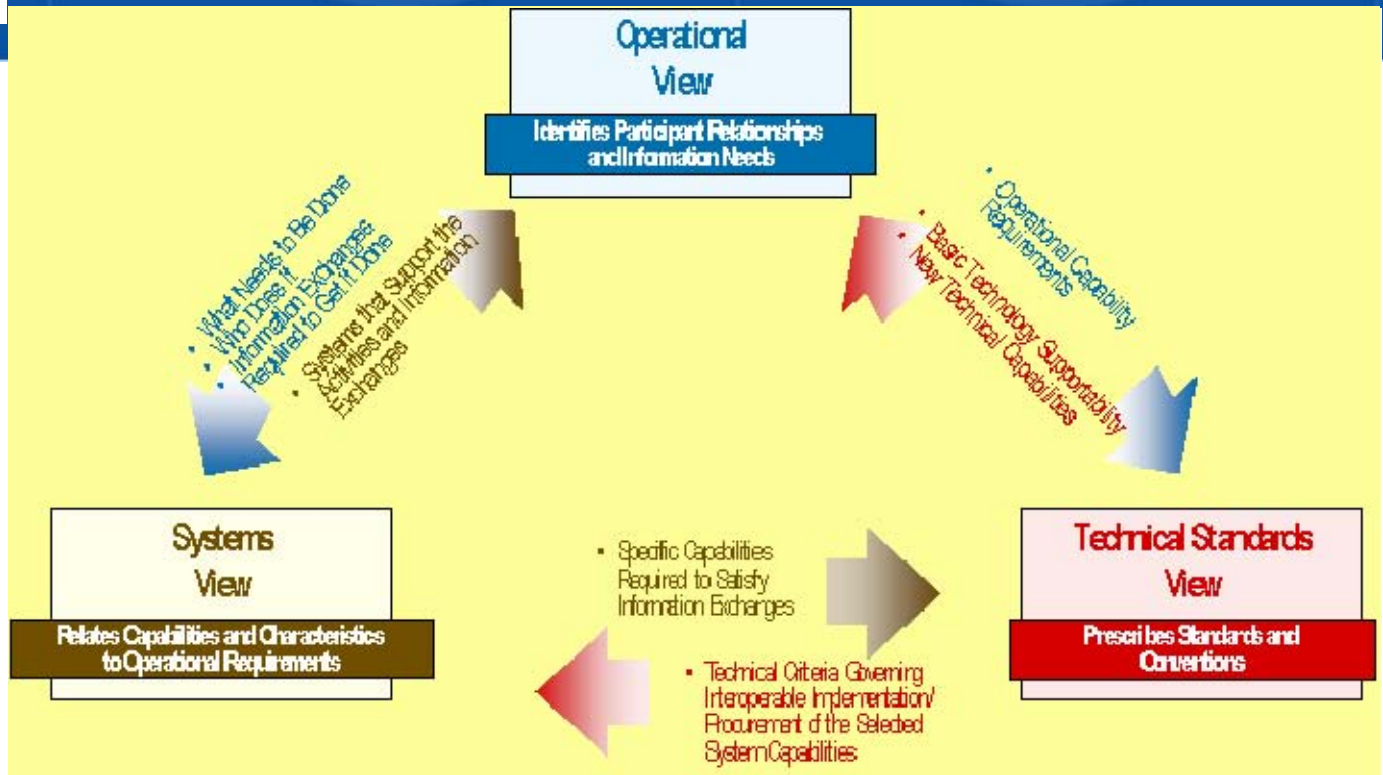
Relationships Between Architecture and Systems Engineering

Integrated Architecture

Systems Engineering

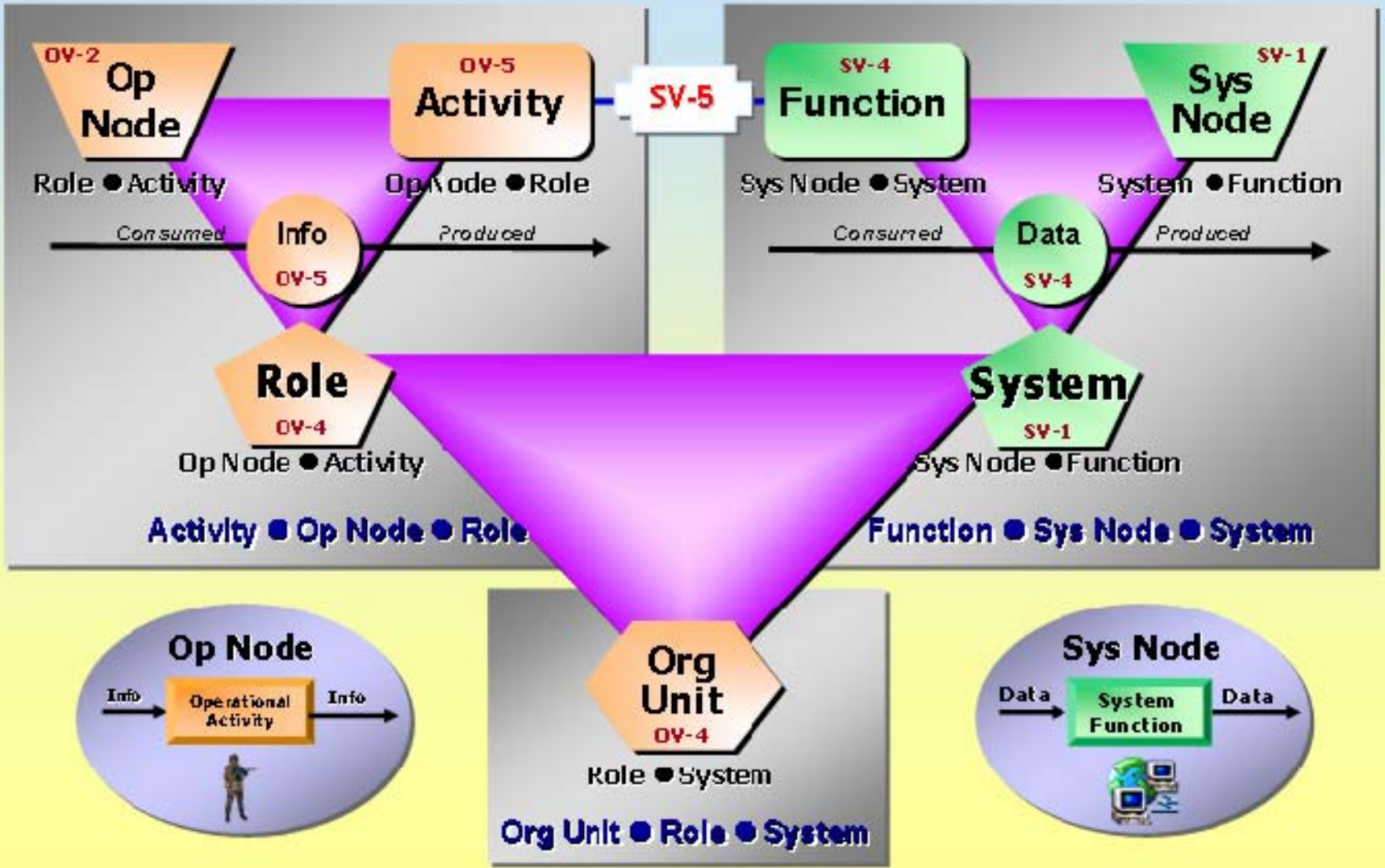
Architecture & Systems Engineering Overlap

Integrated Architecture Views



- **Three views within *DoD/C4ISR Architecture Framework*:**
  - **Operational View: describes the operational/business process**
  - **Systems View: describes the systems that implement the operational/business process**
  - **Technical Standards View: describes the standards used to develop the systems used to implement the operational/business process**

Core Entities Make up Foundation of an Integrated Operational and System Architecture



Navigating the V-22 Net Ready KPP/ Information Support Plan Architecture Views

20 Apr 05

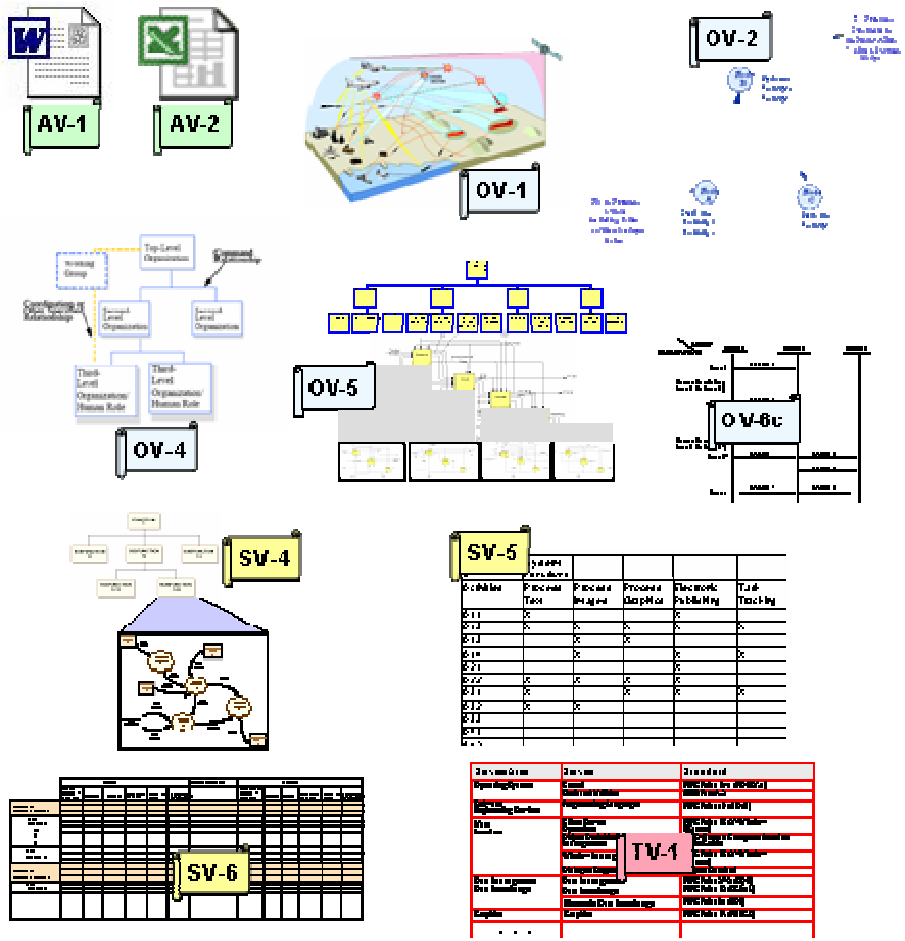
Lawrence McCaskill
Whitney, Bradley and Brown, Inc.
(703) 448-6081 Ext 127
lmccaskill@wbbinc.com

Integrated Architecture Products

- ✓ Developed IAW DODAF V1.0
- ✓ Contain operational, systems and technical view products
- ✓ Reflect Information Needs, Timeliness, Assurance Requirements
- ✓ Are Net enabled
- ✓ TV-1 Standards IAW DISR
- ✓ Facilitate:
  - -- First order analysis - identifying capability gaps, shortfalls and duplications.
  - -- Second order analysis - identifies interoperability requirements.

JCIDS/NR-KPP/ISP Required Integrated Architecture Products

All Views	AV-1	Scope, purpose, intended users, environment depicted, analytical findings
All Views	AV-2	Architecture data repository with definitions of all terms used in all products
Operational	OV-1	High-level Operational Concept Graphic
Operational	OV-2	Operational Node Connectivity Description
Operational	OV-4	Organizational Relationships Chart
Operational	OV-5	Activity Model
Systems	SV-4	Systems Functionality Description
Systems	SV-5	Operational Activity to System Function Traceability Matrix
Systems	SV-6	System Information Exchange Matrix
Technical	TV-1	Technical Architecture Profile



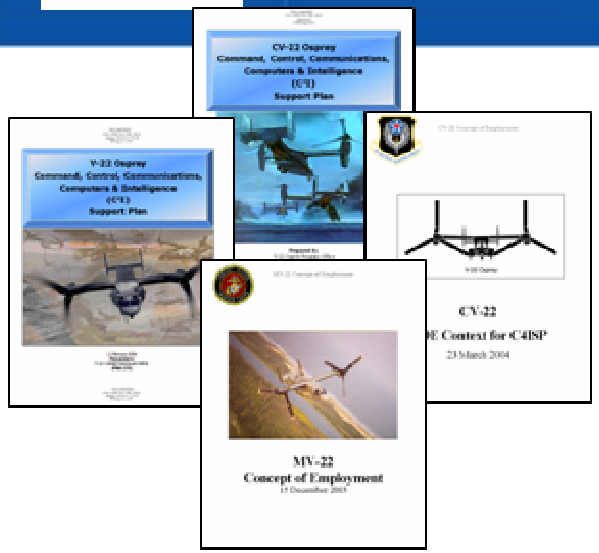
Integrated Architecture = a formal description of the enterprise, using formal engineering notations and matrices

Integrated Architecture Products

DOCUMENT	REQUIRED ARCHITECTURE PRODUCTS															NCOWRM	KIP COMPLIANCE	IA COMPLIANCE
	AV1	OV1	OV2	OV3	OV4	OV5	OV6C	OV7	SV1	SV4	SV5	SV6	SV11	TV1	TV2			
ICD		X						X					X		X			
CDD	X		X	N/A	X	X	X	X		X	X	X	X	X	X	X	X	X
CPD	X		X	N/A	X	X	X	X		X	X	X	X	X	X	X	X	X
ISP	X	X	X		X	X	X		X	X	X	X		X		X	X	X

Primary Resources Used Throughout the Architecture

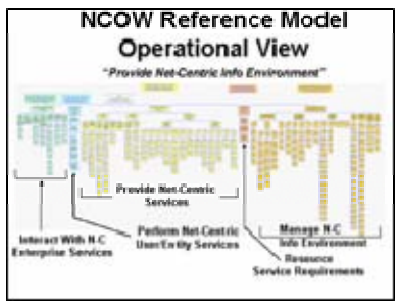
FORCEnet engineering conference



- **Extant Program Documentation:**
  - **C4ISPs**
  - **Concepts of Employment**

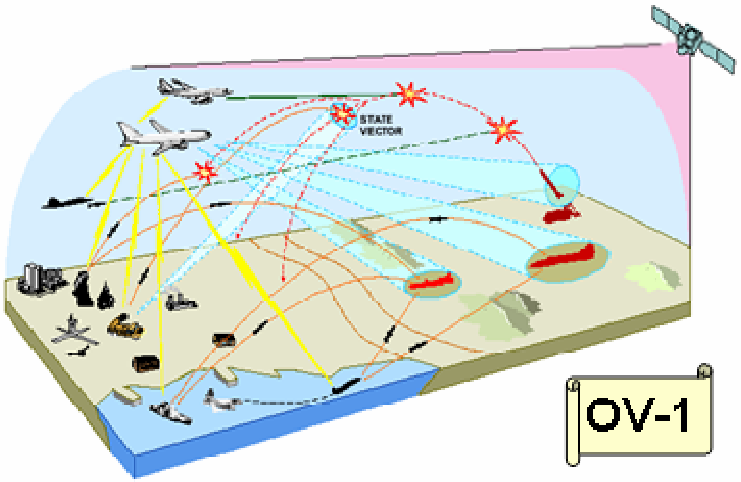
- **Joint and Service Doctrine**
  - **Task Lists (including AF MCL and Draft USMC TL)**
  - **Doctrine Docs**

- **Current Ops/Design Docs**
  - **System Specifications, System/Subsystem Design Docs**
  - **NATOPS, Flight Manuals ("Dash One")**



- **And last but not least… the NCOW RM…**

Relationships Between Products
(Operational Views)



OV-1

Process that implements Ops Concept described, usually in terms of UJTL, JMETL, and Service Task Lists

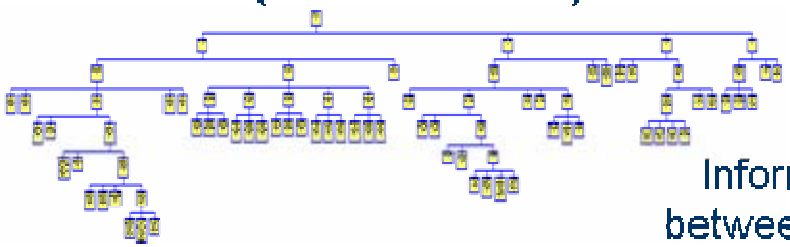
UJTL

JMETL

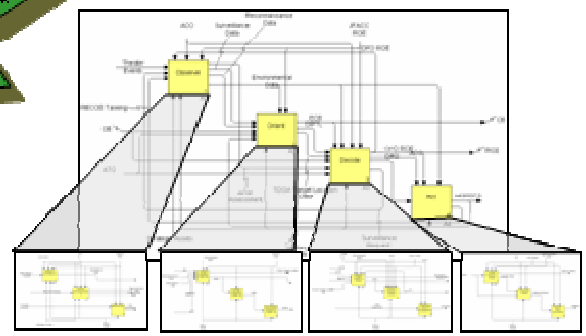
Svc Task Lists

Perform Functional Decomposition

These tasks are expressed as **Activities**, which are hierarchically grouped to form the **OV-5 Activity Model** (Node Tree View)



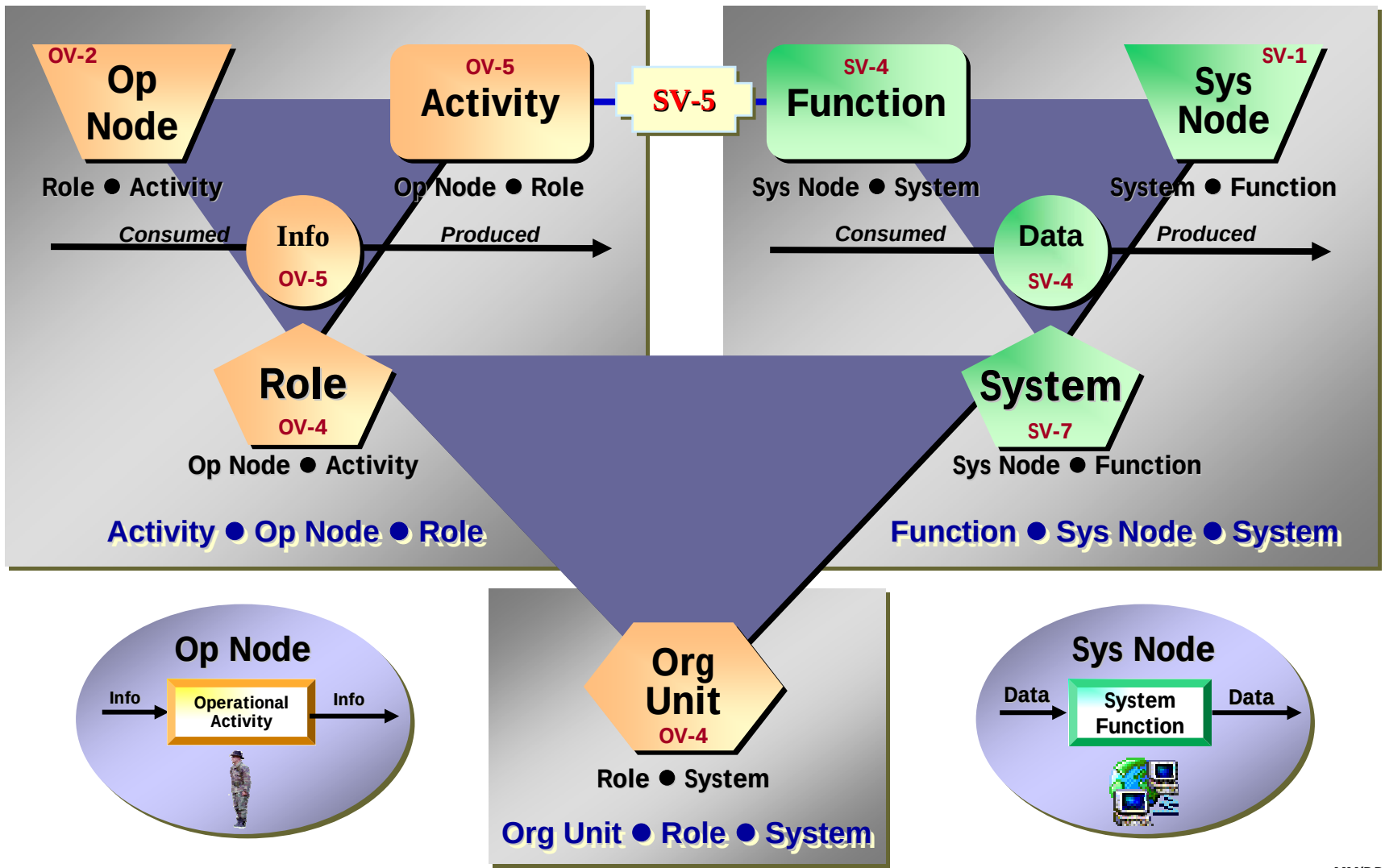
OV-5



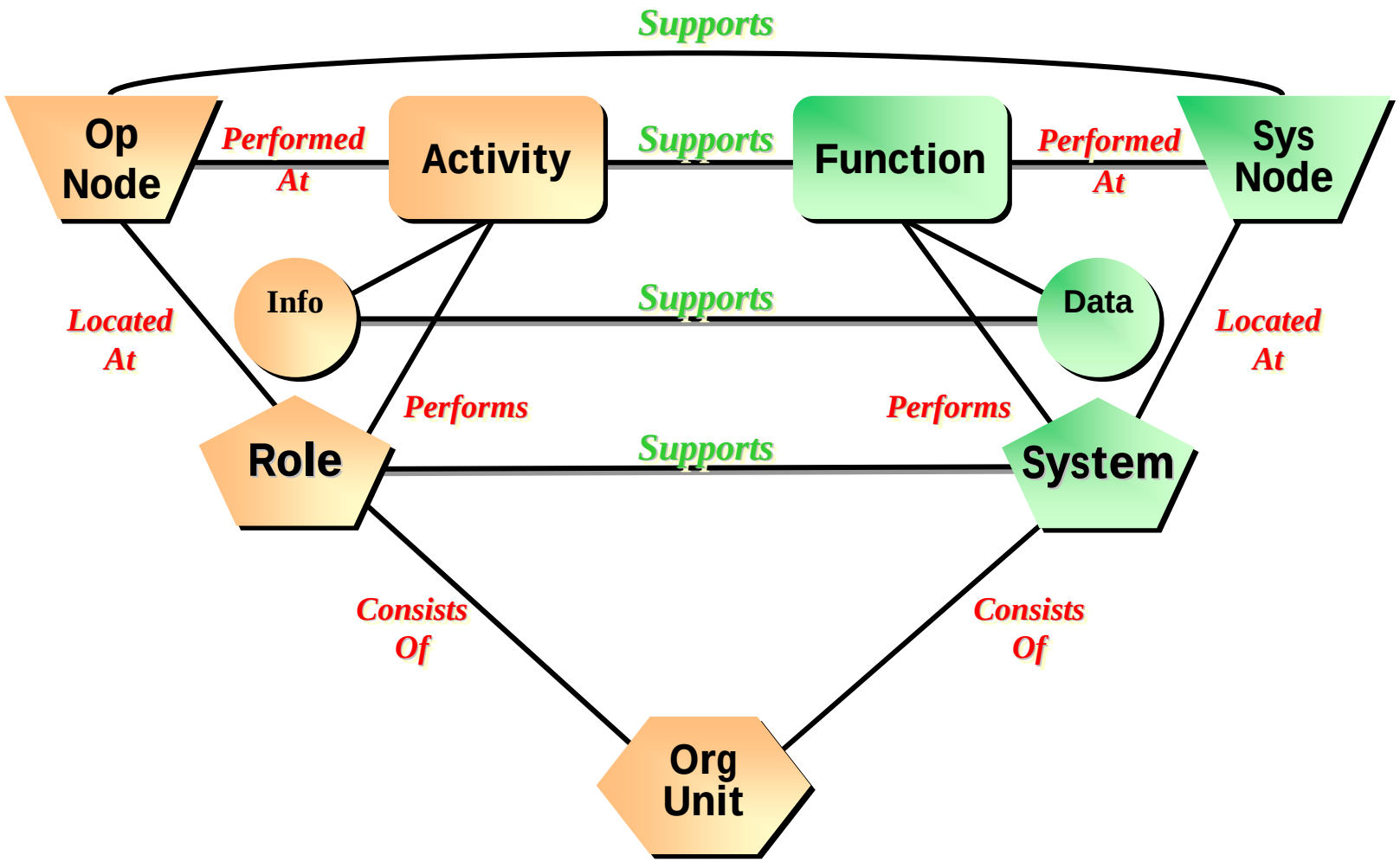
OV-5

Information and/or objects passing between activities are described in the **OV-5 Activity Model** in the form of **Inputs, Controls, Outputs,** and **Mechanisms** (ICOMs)

Foundation of a DoDAF Integrated Architecture: Triple 3-way Association of Core Entities



DoDAF Architecture Data Relationship

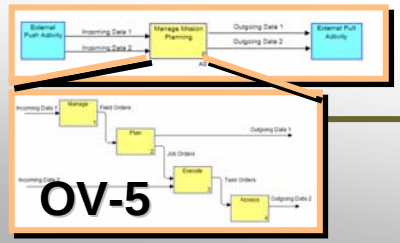


Steps to an Integrated Operational Architecture - Detailed

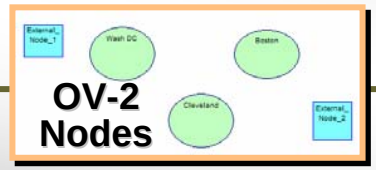
FORCEnet engineering conference

Activity

Info

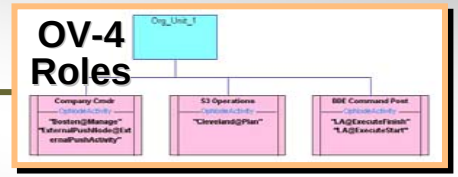


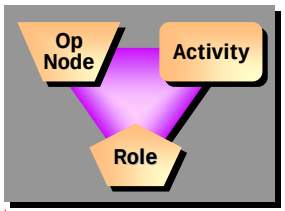
Ops Node



Data Entry

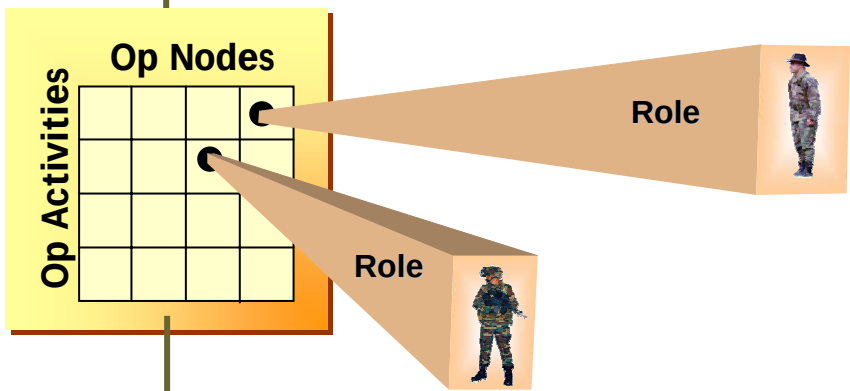
Role





Automation

Manual 3-way Associations



Act1
"NodeA~RoleX"

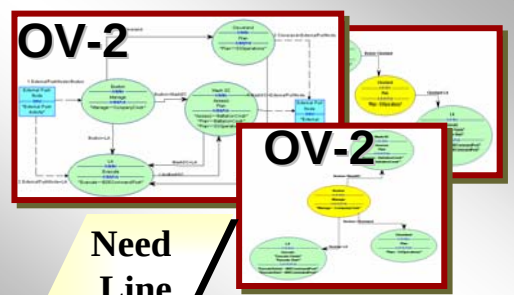
NodeA
"Act1~RoleX"

RoleX
"NodeA~Act1"

Auto form 3-way associations

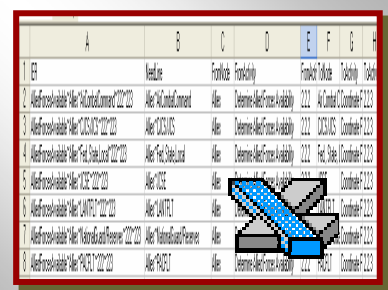
Info Exchange

Render Information Exchanges



Need Line

Complete OV-2



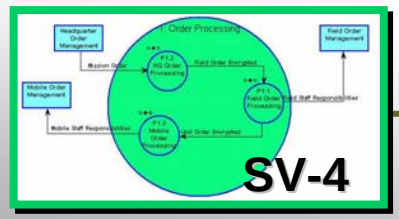
Generate OV-3

Steps to an Integrated Systems Architecture - Detailed

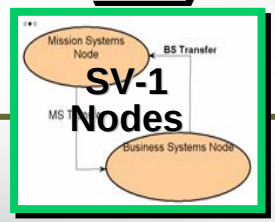
FORCEnet engineering conference

System Function

Data

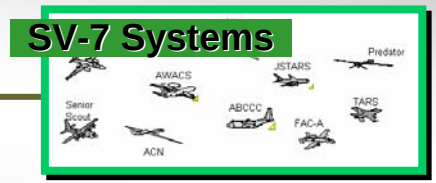


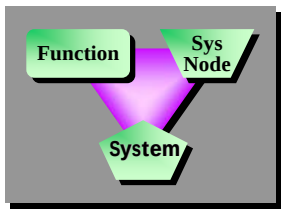
System Node



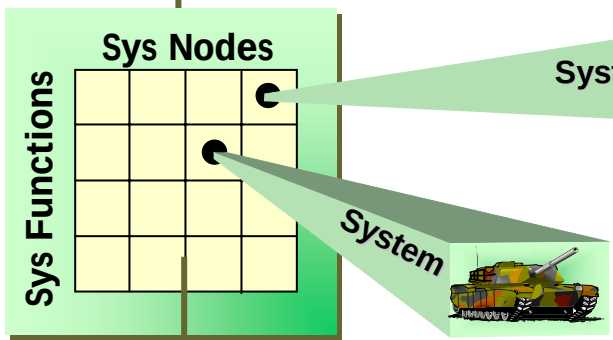
Data Entry

System





Manual 3-way Associations



Automation

Func1
"NodeA~SysX"

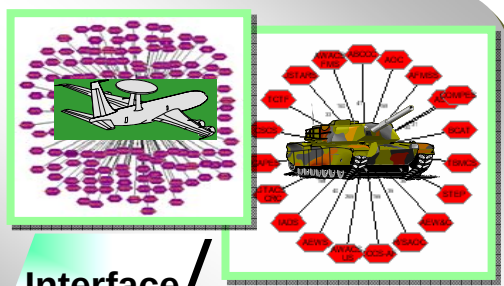
NodeA
"Func1~SysX"

SysX
"NodeA~Func1"

Auto form 3-way associations

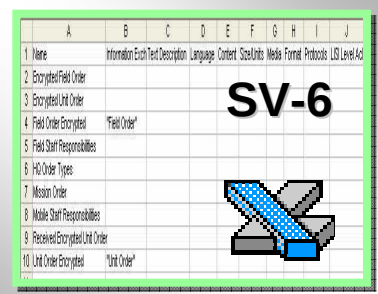
Data Exchange

Render System Data Exchanges



Interface

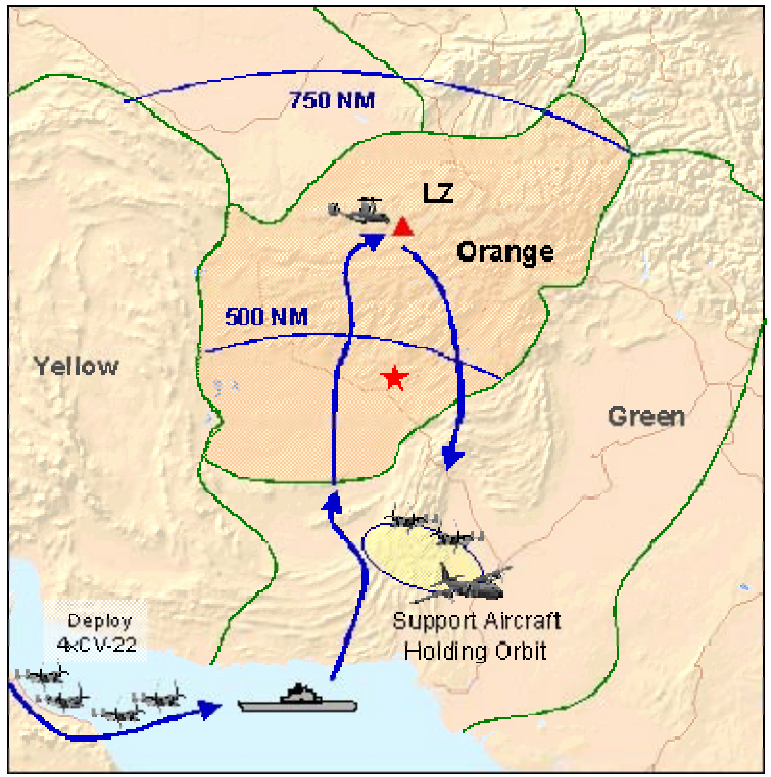
Complete SV-1



Generate SV-6

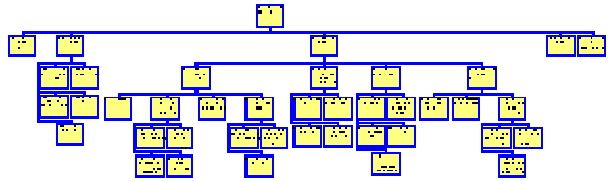
Operational Scenario From CV-22 COE

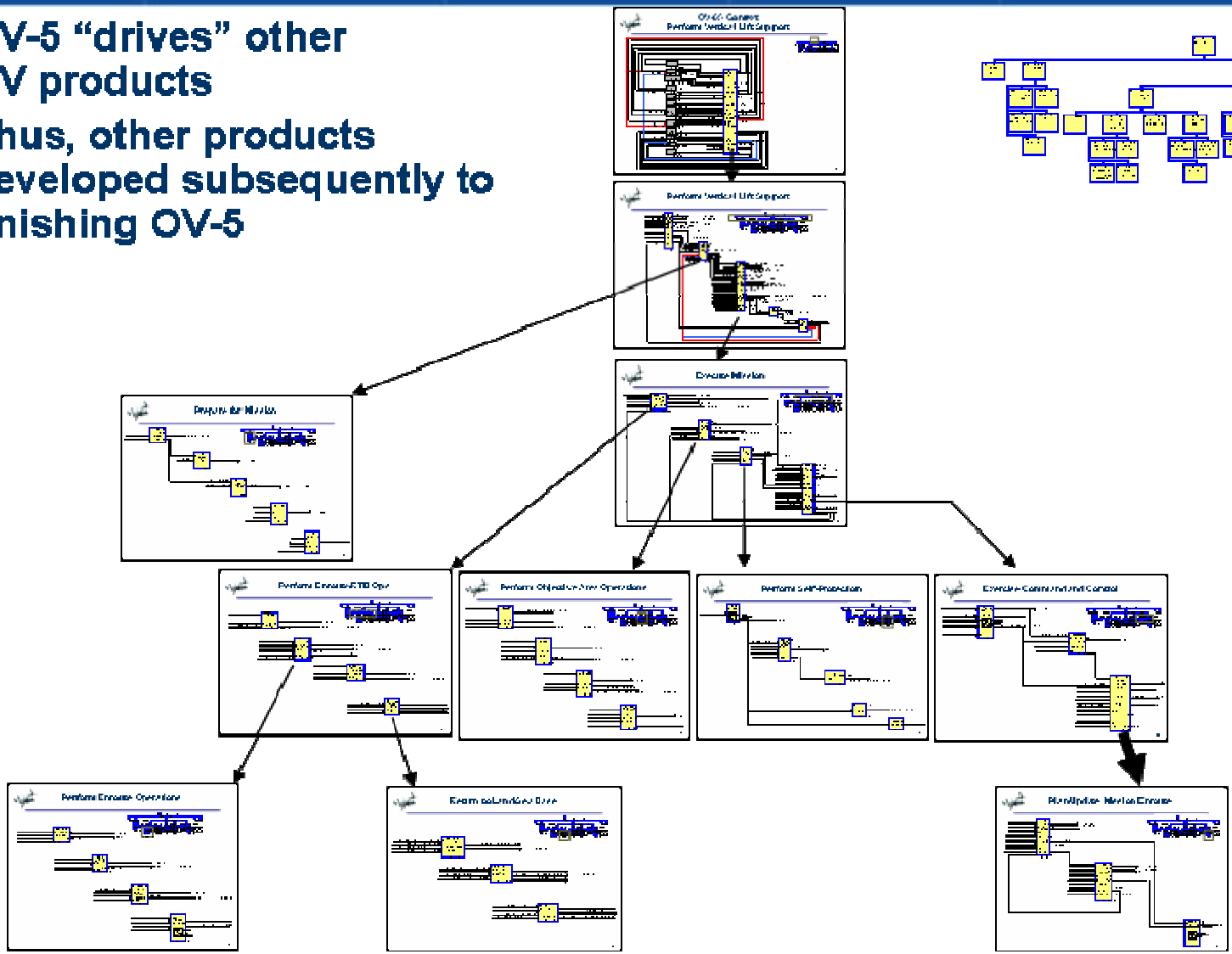
- Insert ADVON team (Delta + OGA personnel) into hostile territory to link up with foreign nationals attempting to oust illegitimate government
- Plan calls for insertion from Marine Amphib (AF requirement to be able to operate from big-deck ships)
- Support assets include:
  - SOF/MC Tanker
  - E-10A
  - Global Hawk
  - MC QRF



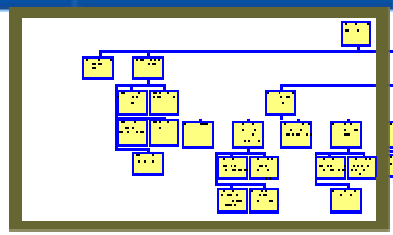
OV-05 Perform Vertical Lift Support

- OV-5 "drives" other OV products
- Thus, other products developed subsequently to finishing OV-5



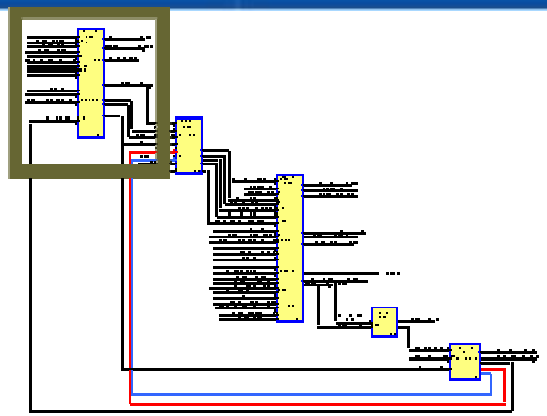


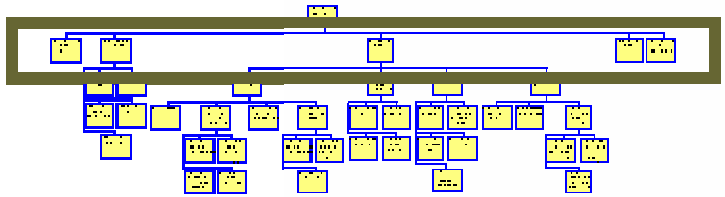
OV-05 NT Perform Vertical Lift Support

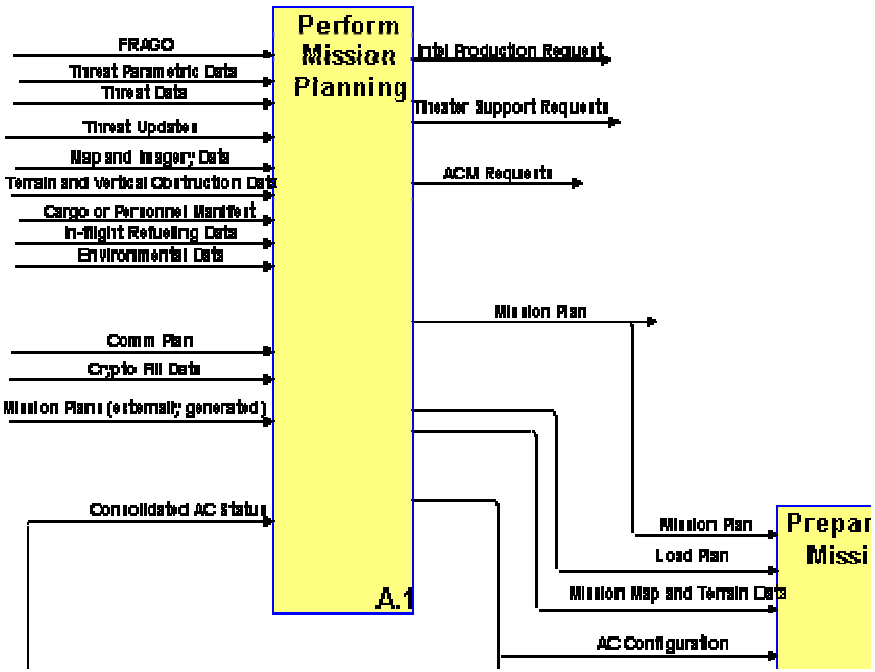


- A.0 Perform Vertical Lift Support
  - A.1 Perform Mission Planning
  - A.2 Prepare for Mission
    - A2.1 Power AC (power-on BIT)
    - A2.2 Load Mission Plan
    - A2.3 Load Map and Terrain Data
    - A2.4 Load Cargo
    - A2.5 Load Personnel
  - A3.1 Perform Enroute/RTB Ops
    - A3.1.1 Takeoff
    - A3.1.2 Perform Enroute Operations
      - A3.1.2.1 Navigate to Objective Area
      - A3.1.2.2 Laager Aircraft (Ground Loiter)
      - A3.1.2.3 Rendezvous with Mission Assets
      - A3.1.2.4 Join Mission Networks
    - A3.1.3 Refuel Aircraft (Receive Fuel)
    - A3.1.4 Return to Land/Sea Base
      - A3.1.4.1 Navigate from Objective Area
      - A3.1.4.2 Transload Personnel or Cargo
      - A3.1.4.3 Land Aircraft

Perform Vertical Lift Support





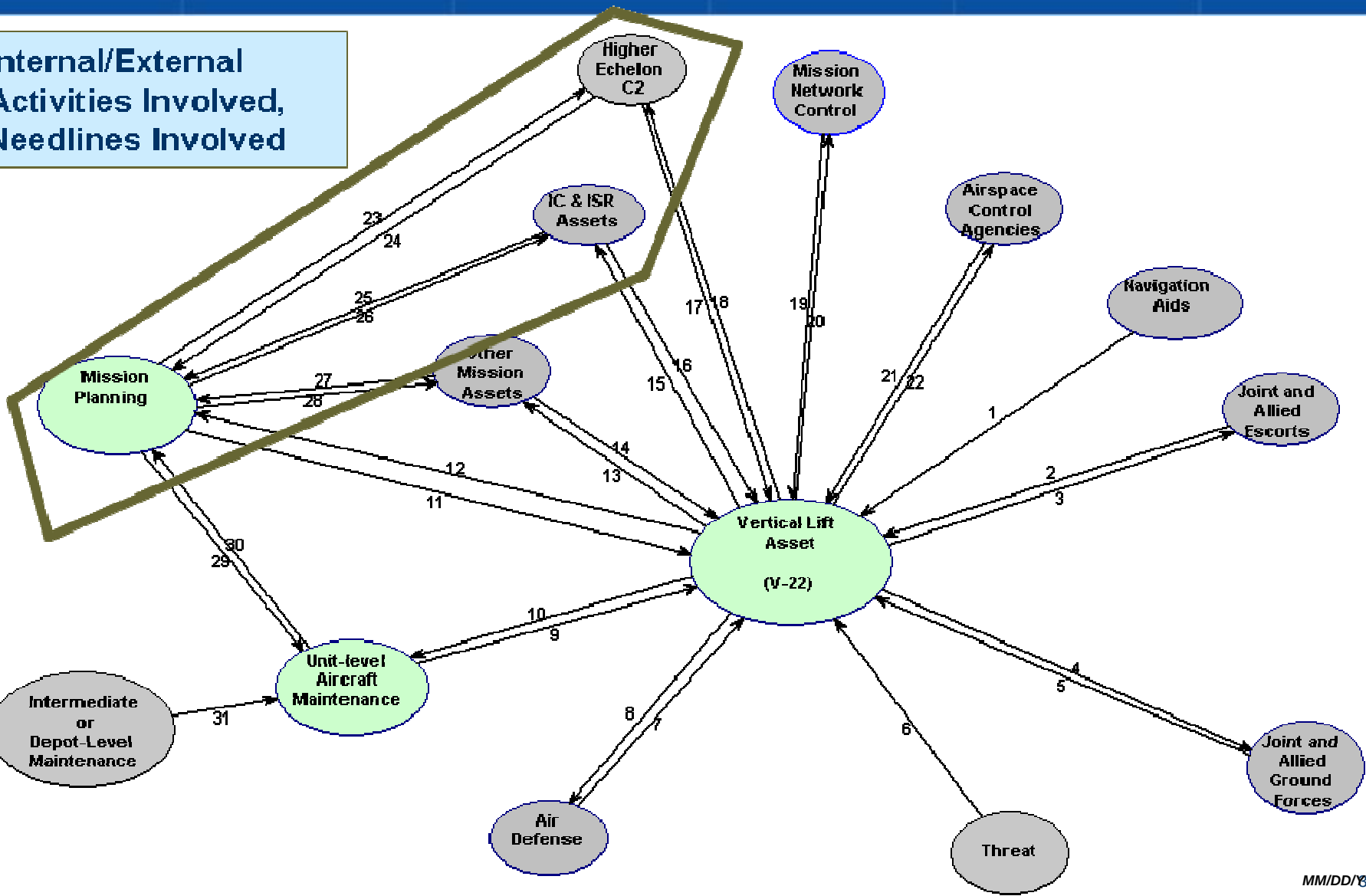


- Orders, and other mission planning material come in
- ACM requests go to higher echelon
- Theater Support Requests (Tanker, E-10A, UAV) go to higher echelons
- Intel Production Requests to “three letter” agencies as mission planning continues

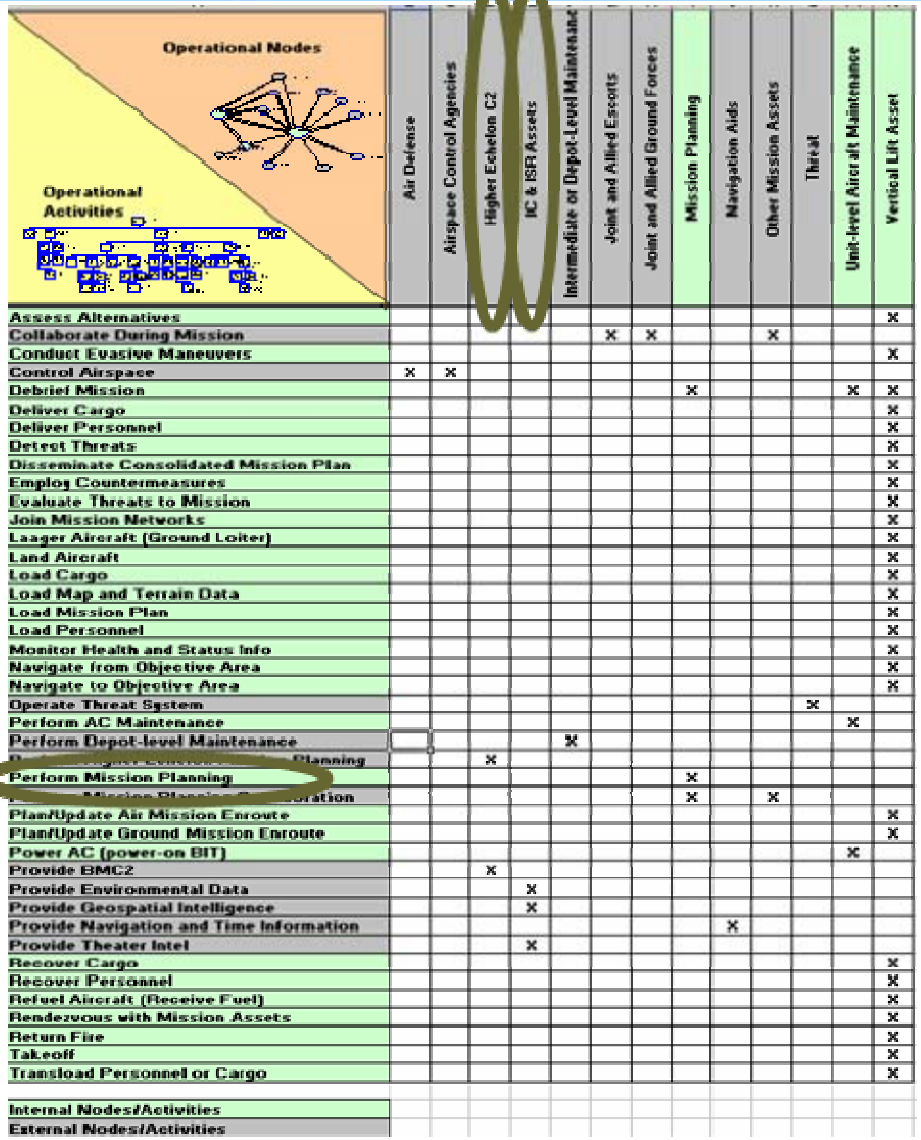
OV-02 V-22

FORCEnet engineering conference

Internal/External Activities Involved, Needlines Involved



Association of OV-2 Op Nodes to OV-5 Activities



Operational Activities \ Operational Nodes	Air Defense	Airspace Control Agencies	Higher Echelon C2	IC & ISR Assets	Intermediate or Depot-Level Maintenance	Joint and Allied Escorts	Joint and Allied Ground Forces	Mission Planning	Navigation Aids	Other Mission Assets	Threat	Unit-level Aircraft Maintenance	Vertical Lift Asset
Assess Alternatives													X
Collaborate During Mission						X	X			X			
Conduct Evasive Maneuvers													X
Control Airspace	X	X											
Debrief Mission								X				X	X
Deliver Cargo													X
Deliver Personnel													X
Detect Threats													X
Disseminate Consolidated Mission Plan													X
Employ Countermeasures													X
Evaluate Threats to Mission													X
Join Mission Networks													X
Laager Aircraft (Ground Loiter)													X
Land Aircraft													X
Load Cargo													X
Load Map and Terrain Data													X
Load Mission Plan													X
Load Personnel													X
Monitor Health and Status Info													X
Navigate from Objective Area													X
Navigate to Objective Area													X
Operate Threat System											X		
Perform AC Maintenance												X	
Perform Depot-level Maintenance					X								
[illegible] Planning			X										
Perform Mission Planning								X					
[illegible]								X		X			
Plan/Update Air Mission Enroute													X
Plan/Update Ground Mission Enroute													X
Power AC (power-on BIT)												X	
Provide BMC2			X										
Provide Environmental Data				X									
Provide Geospatial Intelligence				X									
Provide Navigation and Time Information									X				
Provide Theater Intel				X									
Recover Cargo													X
Recover Personnel													X
Refuel Aircraft (Receive Fuel)													X
Rendezvous with Mission Assets													X
Return Fire													X
Takeoff													X
Transload Personnel or Cargo													X
Internal Nodes/Activities													
External Nodes/Activities													

- OV-2 Operational Node names were chosen/derived
- These were associated with OV-5 Operational Activities
- Via this association, possible OV-3 Info Exchanges were auto-generated
  - Opnode/Activity outputs matching Opnode/Activity Inputs = possible IER
  - Subsequently, these were scrubbed to determine actual IERs

Internal/External Activities Involved, Opnodes Involved

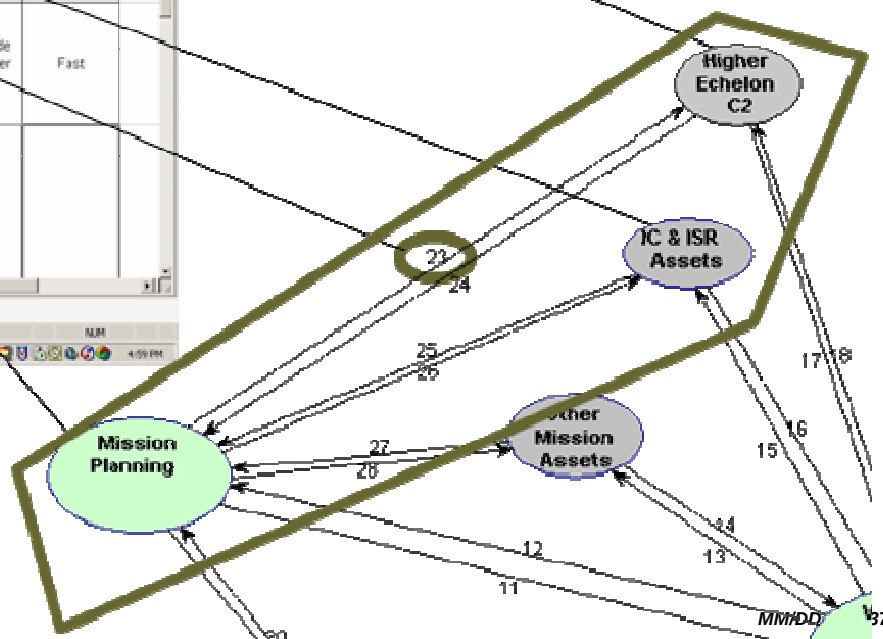
OV-02, OV-3 V-22 Traceability

FORCEnet engineering conference

Traceability between OV-2 Opnodes, Needlines and OV-3

Note: OV-3 not required for NR-KPP

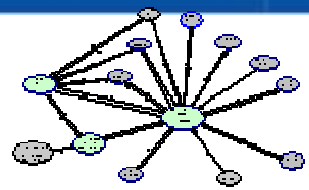
Need Line	IER	ICOM Arrow Glossary Text	From Node	From Activity	To Node	To Activity	Timeliness
23	ACM Requests	Requests to the theater air commander for specific airspace control measures (ACMs) to be implemented in support of the mission, including such measures as Restricted Operations Zones (ROZ), and SAAFRs (Standard Army Aviation Flight Routes).	Mission Planning	Perform Mission Planning	Higher Echelon C2	Perform Higher Echelon Mission Planning	Fast
23	Theater Support Requests	Requests for support from theater assets, including refueling.	Mission Planning	Perform Mission Planning	Higher Echelon C2	Perform Higher Echelon Mission Planning	Fast
25	Threat Data	Data related to the type and location of threats in the expected region of operations. Includes both enemy and nonaligned unit information.	IC & ISR Assets	Provide Theater Intell	Mission Planning	Perform Mission Planning	Very Slow
25	Threat Parametric Data	Threat and emitter parametric data to be used in characterization and identification of threats during a mission.	IC & ISR Assets	Provide Theater Intell	Mission Planning	Perform Mission Planning	Very Slow
25	Threat Updates	Updates to the common relevant operational picture and/or the user defined operational picture (UDOP - essentially a "filtered CROP"). Includes both threat and nonaligned units.	IC & ISR Assets	Provide Theater Intell	Mission Planning	Perform Mission Planning	Fast
26	Intel Production Request	Requests to the intelligence community to produce products (imagery, analysis, etc.) that may assist situational awareness during the mission. Especially in the case of SOF missions, transit times can be long, and current intelligence related to the landing zone (LZ) is critical for mission accomplishment.	Mission Planning	Perform Mission Planning	IC & ISR Assets	Provide Theater Intell	Fast
		Mission Plan, including waypoints, load plans, landing zone information, refueling times and locations, etc. According to the VMPS SSSI, some of the data which VMPS writes on the DTM will include: (a.) Aircraft Configuration data (e.g. weights, cg, etc.)					



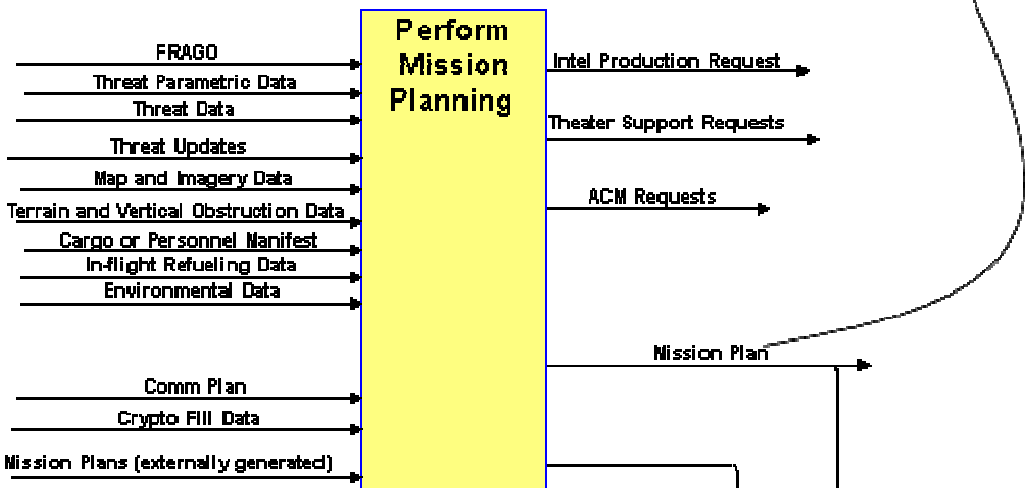
OV-06c V-22

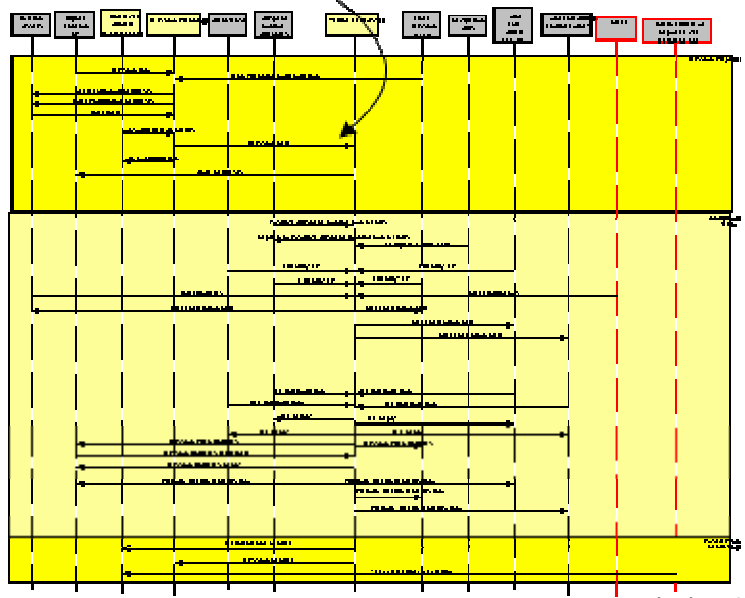
FORCEnet engineering conference

	Name	Description	From Op Node Event Timeline	TO Op Node Event Timeline	ICOM Arrow
19	Intel Updates	See related ICOM definitions.	"IC & ISR Assets"	"Vertical Lift Asset"	"Friendly OB" "Environmental Condition Updates" "Threat Updates"
20	Maintenance Debrief	See related ICOM definitions.	"Unit-level Lift Asset"	"Unit-level Aircraft Maintenance"	"Maintenance Debrief"
21	Mission Data	See related ICOM definitions.	"Mission Planning"	"Vertical Lift Asset"	"AC Configuration" "Load Plan" "Mission Map and Terrain Data" "Mission Plan"



- OV-2 Opnodes on the "Poles"





- OV-5 ICOMS associated with Events

SV-5: Linking SV4 to OV-5

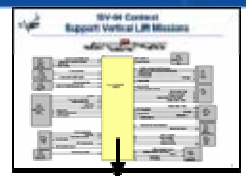
OV-5 Activities

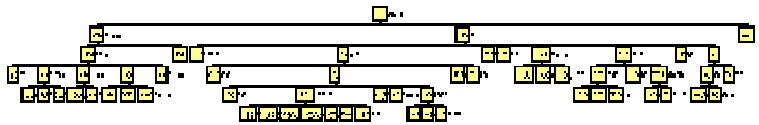
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
1			Operational Activities																										
2	Allocated System Entity	System Leaf Function	Assess Alternatives	Conduct Evasive Maneuvers	Debrief Mission	Deliver Payload	Detect Threats	Disseminate Consolidated Mission Plan	Employ Countermeasures	Evaluate Threats to Mission	Join Mission Networks	Lauger A/C (Ground Loiter)	Land A/C	Load Payload	Load Map and Terrain Data	Load Mission Plan	Monitor Health and Status Info	Navigate from Objective Area	Navigate to Objective Area	Perform A/C Maintenance	Perform Mission Planning	Plan/Update Air Mission Enroute	Plan/Update Ground Mission Enroute	Power A/C (power-on BIT)	Recover Payload	Refuel A/C (Receive Fuel)	Rendezvous with Mission Assets	Takeoff	Transload Payload
3	AMC	Acquire Initial Mission Data													X	X					X								
4	VHF/UHF Radio HWCI; ICS	Acquire Mission Change																				X	X						
5	MATT HWCI (CV-22)	Acquire Situation Data	X							X												X							
6	AMC	Aggregate Position										X	X					X	X								X	X	
7	FIR	Capture AC Incidents															X												
8	IFF	Communicate Friendly Status																									X		
9	AMC	Compare Actual Point to Planned Point	X									X	X					X	X								X	X	
10	VMPS	Create Air Mission																			X								
11	MFR HWCI (MV-22); MMR HWCI (CV-22)	Create Synthetic Image										X						X	X								X		
12	FLIR HWCI	Create Visual Image	X				X											X	X								X		
13	SIRFC HWCI (CV-22)	Detect EOIR Signature		X			X																						
14	LDS HWCI	Detect Laser Signature		X			X																						
15	RWR HWCI; MWS HWCI (MV-22); SIRFC (CV-22)	Detect Radar Signature		X			X																						
16	AMC	Determine AC Status															X												
17	VMS (Vehicle Management System)	Determine AC Velocity										X	X					X	X								X	X	
18	LWINS HWCI	Determine Altitude (Z) via Inertial Properties										X	X					X	X								X	X	
19	AMC	Determine Planned AC Position	X									X	X					X	X								X	X	
20	LWINS HWCI	Determine Position (XY) via Inertial Properties										X	X					X	X								X	X	

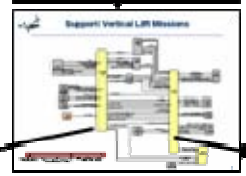
SV-1 Systems for both MV-22 and CV-22

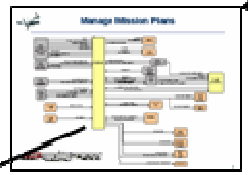
SV-4 System Functions

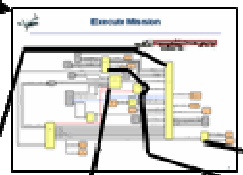
SV-04 Support Vertical Lift Missions

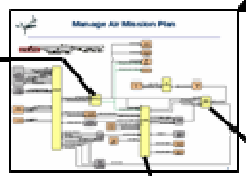


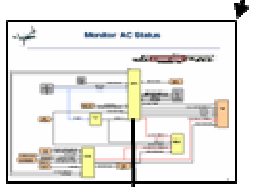


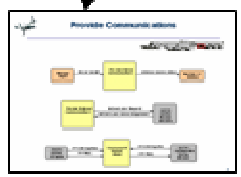


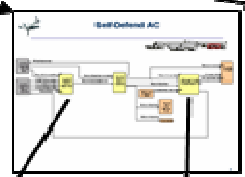


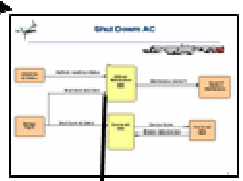


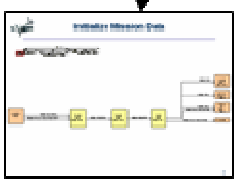


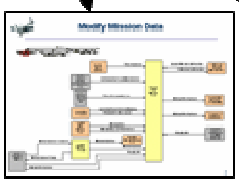


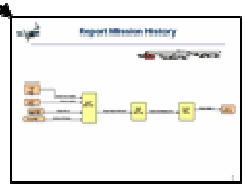


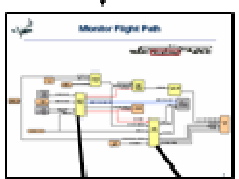


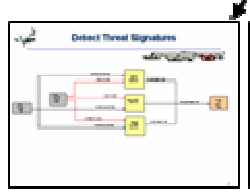


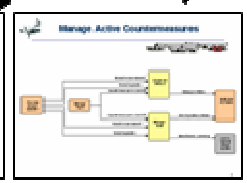


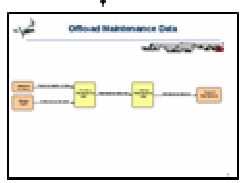


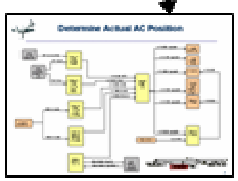


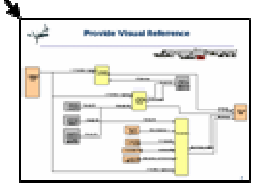




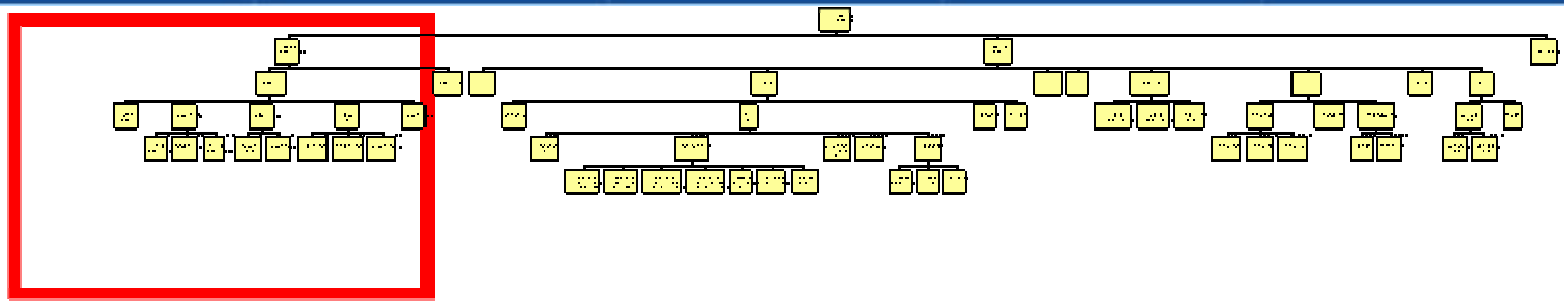


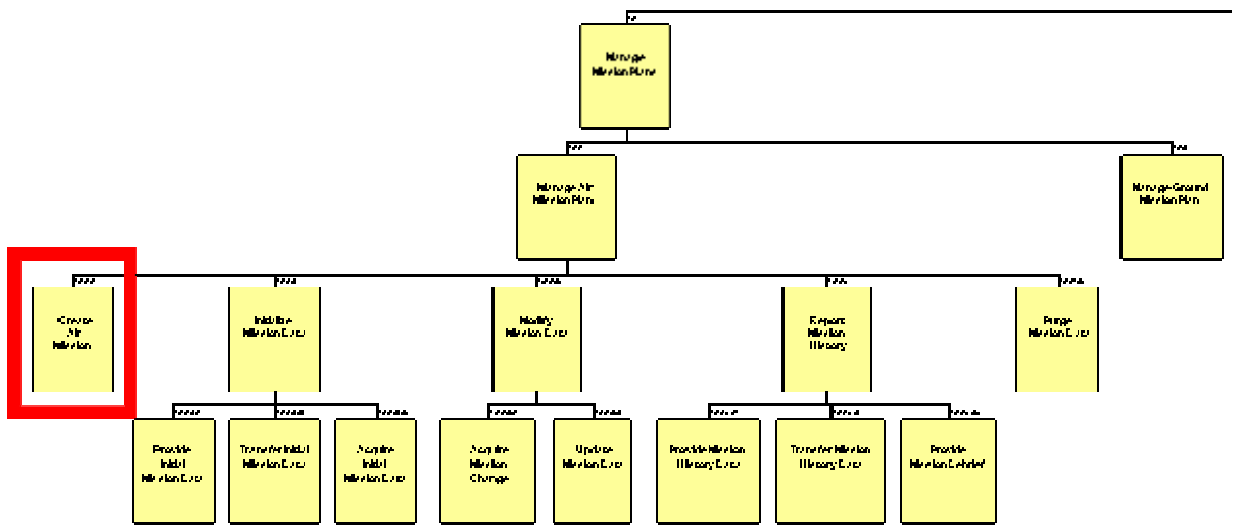




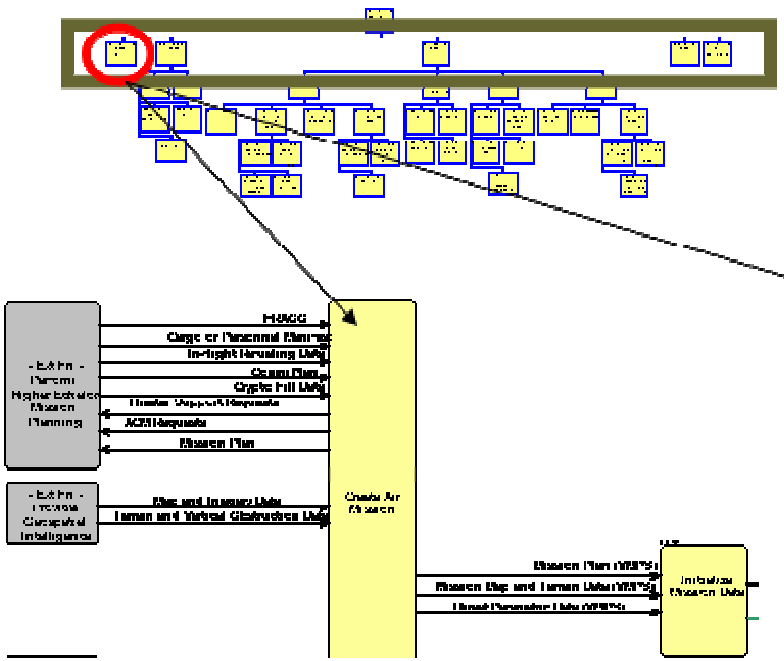


SV-04 FD V-22





Developing the SV-6…



Allocated System Entity	System Leaf Function	Assess Alternatives	Conduct Evasive Maneuvers	Debrief Mission	Deliver Payload	Detect Threats	Disseminate Consolidated Mission Plan	Employ Countermeasures	Evaluate Threats to Mission	Join Mission Networks	Laser A/C (Ground Lase)	Land A/C	Load Payload	Load Map and Terrain Data	Load Mission Plan	Monitor Health and Status Info	Navigate from Objective Area	Navigate to Objective Area	Perform A/C Maintenance	Perform Mission Planning	Plan/Update Air Mission Enroute	Plan/Update Ground Mission Enroute	Power A/C (power-on BIT)	Recover Payload	Refuel A/C (Receive Fuel)	Rendezvous with Mission Assets	Takeoff	Transload Payload
		Operational Activities																										
AMC	Acquire Initial Mission Data													X	X					X								
VHF/UHF Radio HWCI; ICS	Acquire Mission Change																				X	X						
MATT HWCI (CV-22)	Acquire Situation Data	X							X												X							
AMC	Aggregate Position										X	X					X	X								X	X	
FIR	Capture AC Incidents															X												
IFF	Communicate Friendly Status																									X		
AMC	Compare Actual Point to Planned Point	X									X	X					X	X								X	X	
VMPS	Create Air Mission																			X								
MPR HWCI (MV-22); MMR HWCI (CV-22)	Create Synthetic Image										X						X	X								X		
FLIR HWCI	Create Visual Image	X				X											X	X								X		
SIRFC HWCI (CV-22)	Detect EOIR Signature		X			X																						
LDS HWCI	Detect Laser Signature		X			X																						
RWR HWCI; MWS HWCI (MV-22); SIRFC (CV-22)	Detect Radar Signature		X			X																						

- Remembering ABM for SV's:
  - By virtue of the 3 way association between the SV-4 System Function, SV-1 System, we've started to make the associations that will be carried into the SV-6
  - Currently: SV-4 Sys Fn associated with SV-1 System

Developing the SV-6…

FORCEnet engineering conference

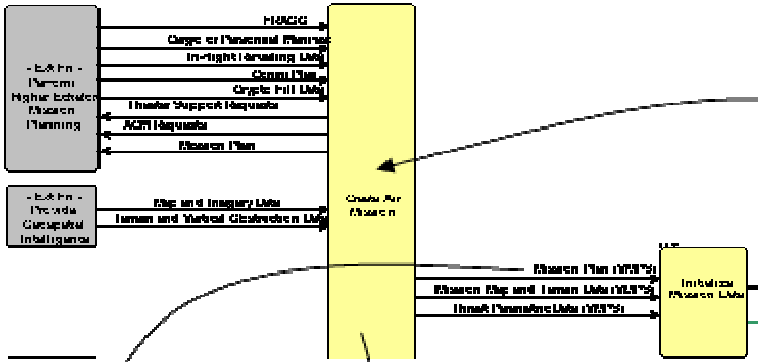
SV-1 System Nodes / SY-4 System Fns	AOC	ATC	BMC2 Platform	CV-22 Block 10 Systems	CV-22 IAS	CV-22 Maintenance	CV-22 Mission Planning	Deployment Base Level	Earth	External Mission Planning	GPS Constellation	Intel Community	MV-22	MV-22 Block 10 Systems	MV-22 IAS	MV-22 Maintenance	MV-22 Mission Planning	NGA	Other Mission Assets	Threat	Weather Cell
- Ext Fn - Collaborate During Mission		X	X																X		
- Ext Fn - Control Airspace		X	X																		
- Ext Fn - Control Mission Networks			X																		
- Ext Fn - Operate Threat System																				X	
- Ext Fn - Perform Depot-level Maintenance								X													
- Ext Fn - Perform Higher Echelon Mission Planning	X																				
- Ext Fn - Perform Mission Planning Collaboration										X											
- Ext Fn - Provide BMC2			X																		
- Ext Fn - Provide Environmental Data																					X
- Ext Fn - Provide Geospatial Intelligence																			X		
- Ext Fn - Provide Navigation Info and Time		X									X										
- Ext Fn - Provide Theater Intel												X									
- Ext Fn - Reflect or Emanate EO/IR/Radar										X											
Acquire Initial Mission Data					X										X						
Acquire Mission Change					X										X						
Acquire Situation Data					X																
Aggregate Position (XYZ)					X										X						
Capture AC Incidents					X										X						
Communicate Friendly Status					X										X						
Compare Actual Position to Planned Position					X										X						
Create Air Mission							X										X				
Create Synthetic Image					X										X						
Create Visual Image					X										X						
Detect EO/IR Signature					X										X						
Detect Laser Signature					X										X						
Detect Radar Signature					X										X						
Determine AC Status					X										X						
Determine AC Velocity					X										X						
Determine Altitude (Z) via Inertial Properties					X										X						
Determine Planned AC Position					X										X						
Determine Position (XY) via Inertial Properties					X										X						
Determine Position (XY) via Radio Beacon					X										X						
Determine Position (XYZ) via Satellites					X										X						
Determine Time					X										X						
Dispense Decoys					X										X						
Initialize AC					X										X						
Manage ECM					X										X						
Manage Flight					X										X						
Manage Ground Mission Plan					X										X						
Manage Payload					X										X						
Measure Altitude (Z) from AC					X										X						
Provide External Communications					X										X						
Provide Flight Adjustments					X										X						
Provide Initial Mission Data					X										X						
Provide Internal Communications					X										X						
Provide Maintenance Data					X										X						
Provide Map					X										X						
Provide Mission Debrief					X										X						
Provide Mission History Data					X										X						
Provide Threat Updates					X																
Purge Mission Data					X										X						
Refuel AC					X										X						
Support Maintenance						X										X					
Transfer Initial Mission Data					X										X						
Transfer Maintenance Data					X										X						
Transfer Mission History Data					X										X						
Update Air Mission Data					X										X						
Zeroize AC Data					X										X						

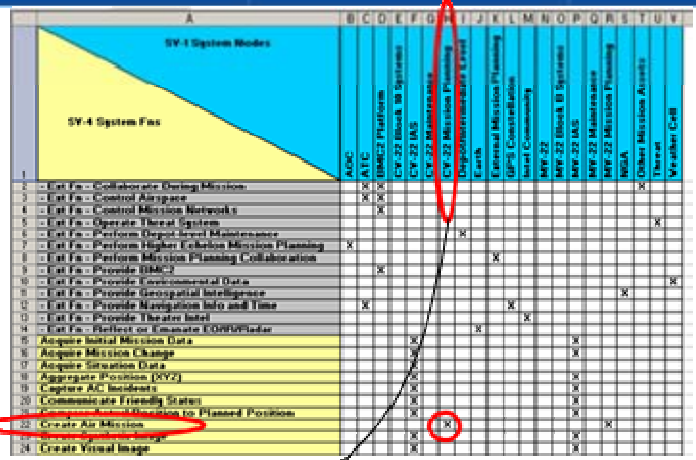
- Remembering ABM for SV's:
  - Add the association to the SV-1 System Node, and you have the information necessary to autogenerate the SV-6:
    - SV-1 System Nodes *contain*
    - SV-1 System Entities *performing*
    - SV-4 System Functions

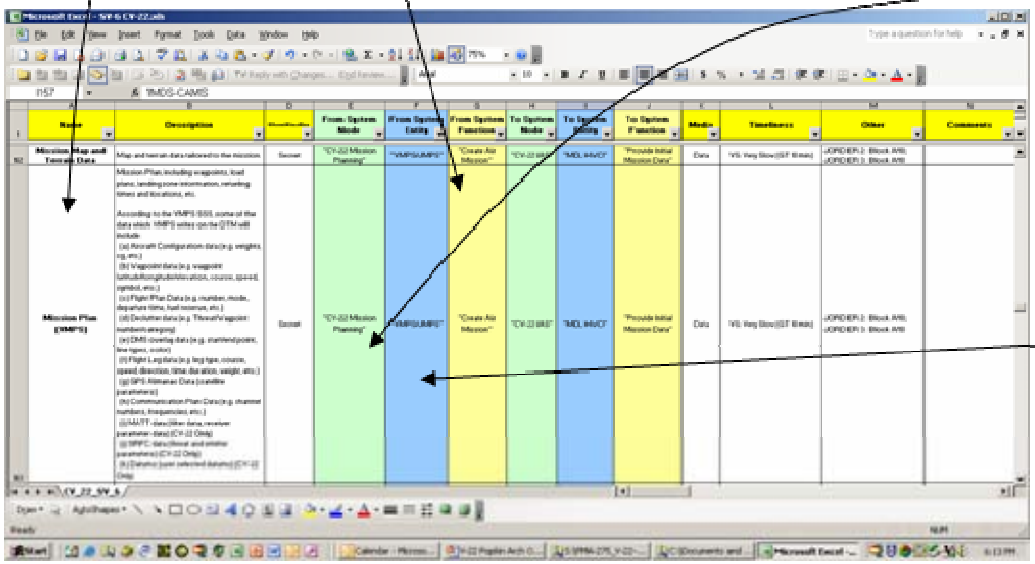
Allocated System Entity	System Leaf Function	Assess Alternatives	Conduct Evasive Maneuvers	Debrief Mission	Deliver Payload	Detect Threats	Disseminate Consolidated Mission Plan	Employ Countermeasures	Evaluate Threats to Mission	Join Mission Networks	Launch AC (Ground Letter)	Load A/C	Load Payload	Load Map and Terrain Data	Load Mission Plan	Monitor Health and Status Info	Navigate from Objective Area	Navigate to Objective Area	Perform A/C Maintenance	Perform Mission Planning	Plan/Update Air Mission Enroute
		Operational Activities																			
AMC	Acquire Initial Mission Data													X	X						X
VHF/UHF Radio HWCI; ICS	Acquire Mission Change																				X
MATT HWCI (CV-22)	Acquire Situation Data	X							X												X
AMC	Aggregate Position										X	X					X	X			
FIR	Capture AC Incidents															X					
IFF	Communicate Friendly Status																				
AMC	Compare Actual Point to Planned Point	X									X	X					X	X			
VMPS	Create Air Mission																			X	
MFR HWCI (MV-22); MMR HWCI (CV-22)	Create Synthetic Image										X						X	X			
PLIR HWCI	Create Visual Image	X				X											X	X			
SIRFC HWCI (CV-22)	Detect EOIR Signature		X			X															
LDS HWCI	Detect Laser Signature		X			X															
RWR HWCI; MWS HWCI (MV-22); SIRFC (CV-22)	Detect Radar Signature		X			X															

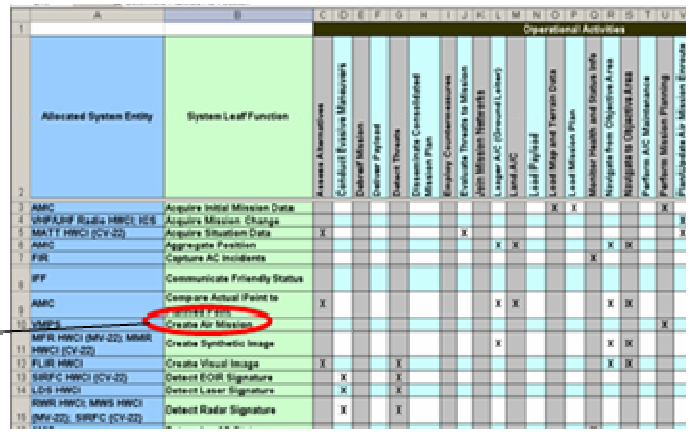
SV-6

FORCEnet engineering conference









TV-1 Technical Standards Profile

Service Area	Service	Standard
Operating System	Kernel	FIPS Pub 151-1 (POSIX 1)
	Shell and Utilities	IEEE P1003.2
Software Engineering Services	Programming Languages	FIPS Pub 119 (ADA)
User Interface	Client Server Operations	FIPS Pub 158 (X-Window System)
	Object Definition and Management	DoD Human Computer Interface Style Guide
	Window Management	FIPS Pub 158 (X-Window System)
	Dialogue Support	Project Standard
Data Management	Data Management	FIPS Pub 127-2 (SQL)
Data Interchange	Data Interchange	FIPS Pub 152 (SGML)
	Electronic Data Interchange	FIPS Pub 161 (EDI)
Graphics	Graphics	FIPS Pub 153 (PHIGS)
• • •		

- References the technical standards that apply to the architecture and how they need to be, or have been, implemented.
- Completed on SIPRNET: profile V-22 Block B/10
- Also provided in DoDAF TV-1 format in NR-KPP

KIP Definition

Key

- The interface spans organizational boundaries
- The interface is mission critical
- The interface is difficult or complex to manage
- There are capability, interoperability, or efficiency issues associated with the interface
- The interface impacts multiple acquisition programs
- The interface is vulnerable or important from a security perspective

- "N-squared" set of point-to-point interfaces already exists or has the potential to emerge
- The number of current and potential providers and/or consumers of the services offered via the interface is large

Interface

- Rules and technical IT parameters with which the consumer of a service must comply at the interconnectivity point
- If there are multiple providers of the service, they must each use the same technical parameters at the interconnectivity point

DODI 4630.8

New

Profile

- DoDR 5000.2 mandates the development and vetting of standards profiles as part of the DoD Acquisition Process
- Standards profiles may be lists of standards by name and version, prior to becoming a reference implementation
- Standards profiles, prior to system implementation, are necessary but not sufficient to ensure interoperability
- KIPs specify the parameters of a standard interface that are mandatory for interoperability (Implementation Profiles)
- KIPs include reference implementations that demonstrate the instantiation of the standard interface

FORCEnet
engineering
conference

KIP Use and Responsibilities

KIP Principles

- Key interfaces are viewed from both the consumer and provider perspective
- Consumers and providers each have responsibilities for implementing KIPs
- KIP's life cycles evolve from emerging to mandated just as DOD standards do
- KIPs are not a standards creation process
- KIPs are driven by real programs and IT initiatives

	Consumer	Provider
Emerging	• Identify forecasted key interfaces in TV-2 • Plan for future use of key interface profiles • Plan and program for testing of KIPs	• Work with DISA to document profiles in accordance with system development • Work with JITC to identify test strategy
Mandated	• Identify applicable KIPs • Build system to profile • Conduct standards conformance testing against profile as part of DT	• Adhere to enterprise config mgt of key interface • Update profile • Provide instantiation for testing (if necessary)

Key Interface Profile Products

- ✓ Refined Operational Views (OV)
- ✓ Refined System Views (SV)
- ✓ Interface Control Specifications -- Interface Control Document (ICD)
- ✓ System-Technical View (SV-TV) Bridge
- ✓ Configuration Management Plan
- ✓ Procedures for Standards Conformance and Interoperability Testing utilizing reference implementation

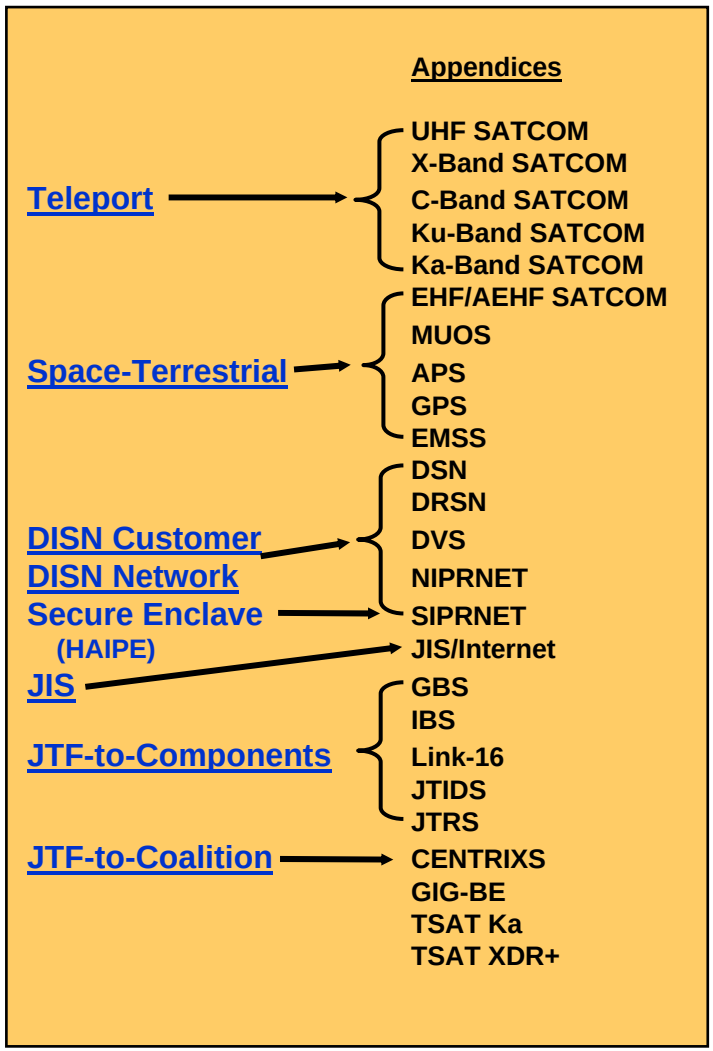
---

KIP Compliance

- Analysis required by PM to determine applicable KIPs
- Implemented IAW profile
- Key interface validated during JITC testing

KIP Family Interfaces

Communications



Computing

Applications to COE

DECC
DCGS
GCSS-AF
AOC WS

Enterprise Services

Client-Server
App Svr-DB Svr
End Sys-PKI
IDM-Dist Infrastr
Info Svr-IDM Infrastr
App Svr-Shared Data

NCES Increment 1
(Svcs w/ defined interfaces)
Example
Content Discovery
Mediation
Messaging

NetOps

Mngt Sys to Mng Sys
Mngt Sys to Integ Mgt Sys

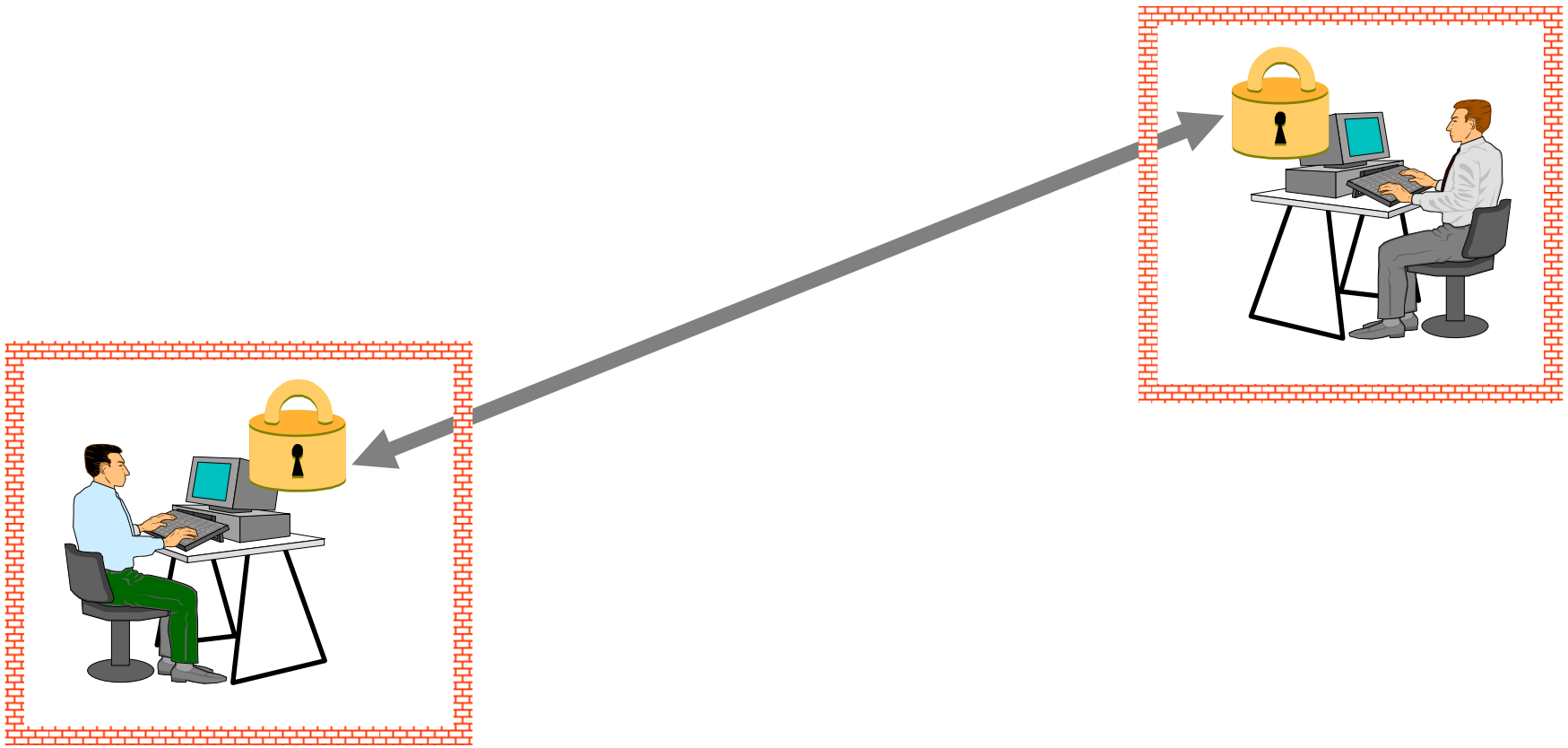
NetOps

KIP Declaration

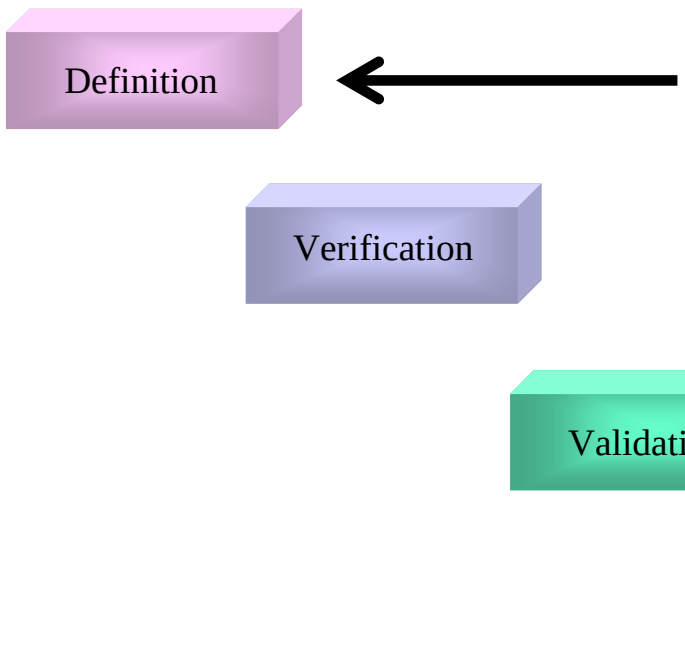
Key Interface	Applicable Yes/No
1. **Logical Networks to DISN Transport Backbone.** Does your network connect to DISN Backbone (e.g., NIPRNET, SIPRNET, DSN, DRSN, DVS-G), NMCI, Tactical Internet, etc)?	**Yes**
2. **Space to Terrestrial Interface.** Does your system utilize or require access to DOD SATCOM programs such as DSCS, MILSTAR, FLTSAT, UFO, MUOS, Polar EHF, GPS, GBS, INMARSAT, Wideband Gap filler, etc?	**Yes**
3. **JTF to Coalition.** Does your program or system interface with/connect the JTF to coalition forces?	**Yes**
4. **JTF Component to JTF Headquarters.** Does your program or system interface/connect the JTF Component to the JTF Headquarters?	**Yes**
5. **STEP and TELEPORT.** Does your system interface with/connect with STEP/TELEPORT systems?	**Yes**
6. **Joint Interconnection Service.** Does your organization/system connect the NIPRNET to Internet?	**No**
7. **DISN Service Delivery Point.** Does your base, camp, post, station, unit or organization/system connect to the DISN?	**No**
8. **Secure Enclave Service Delivery Point.** Does your system or program interface with or connect a Secure Enclave local area network to DISN service delivery point?	**No**
9. **Applications to Shared Data.** Does your application require access to shared data residing in NCES/GES infrastructure?	**Yes**
10. **Client to Server.** Does your workstation, PDA, or device publish, utilize or require access to data residing in DOD/NCES/GES servers?	**No**
11. **End System to PKI.** Do your workstation, PDA, or device and applications utilize or interface with DOD **PKI?**	**No**
12. **Management Systems to (integrated) Management Systems.** Does your management system interface with DOD GNOSC, RNOSC? Includes NIPRNET NOC, GSSC, SIPRNET NOC, DSN NOC, DRSN NOC?	**No**
13. **IDM to Distribution Infrastructure.** Does your network management system and communications system interface with/requires access to NCES/GES?	**No**
14. **Information Servers to IDM Infrastructure.** Does your information server interface with NCES/GES Infrastructure?	**No**
15. **Management Systems to Managed Systems.** Does your system for personal and local computing manage the local network infrastructure (routers, WAPs, switches, hubs, firewalls, gateways, IDS), servers, and terminal devices (desktop computers, printers, wireless terminals?	**No**
16. **Application Server to Database Server.** Does your web or application server require access to NCES/GES database server(s)?	**No**
17. **Applications to NCES/GES.** Does your application require access to NCES/GIG ES services?	**Yes**

Net Ready KPP Components

4. Information Assurance Accreditation



Information Assurance Accreditation



The system must fully comply with DODD 8500.1 and DODI 8500.2 and with Phase 1 Definition of DITSCAP (DODI 5200.40). Provide required IA documentation to JS/J6I

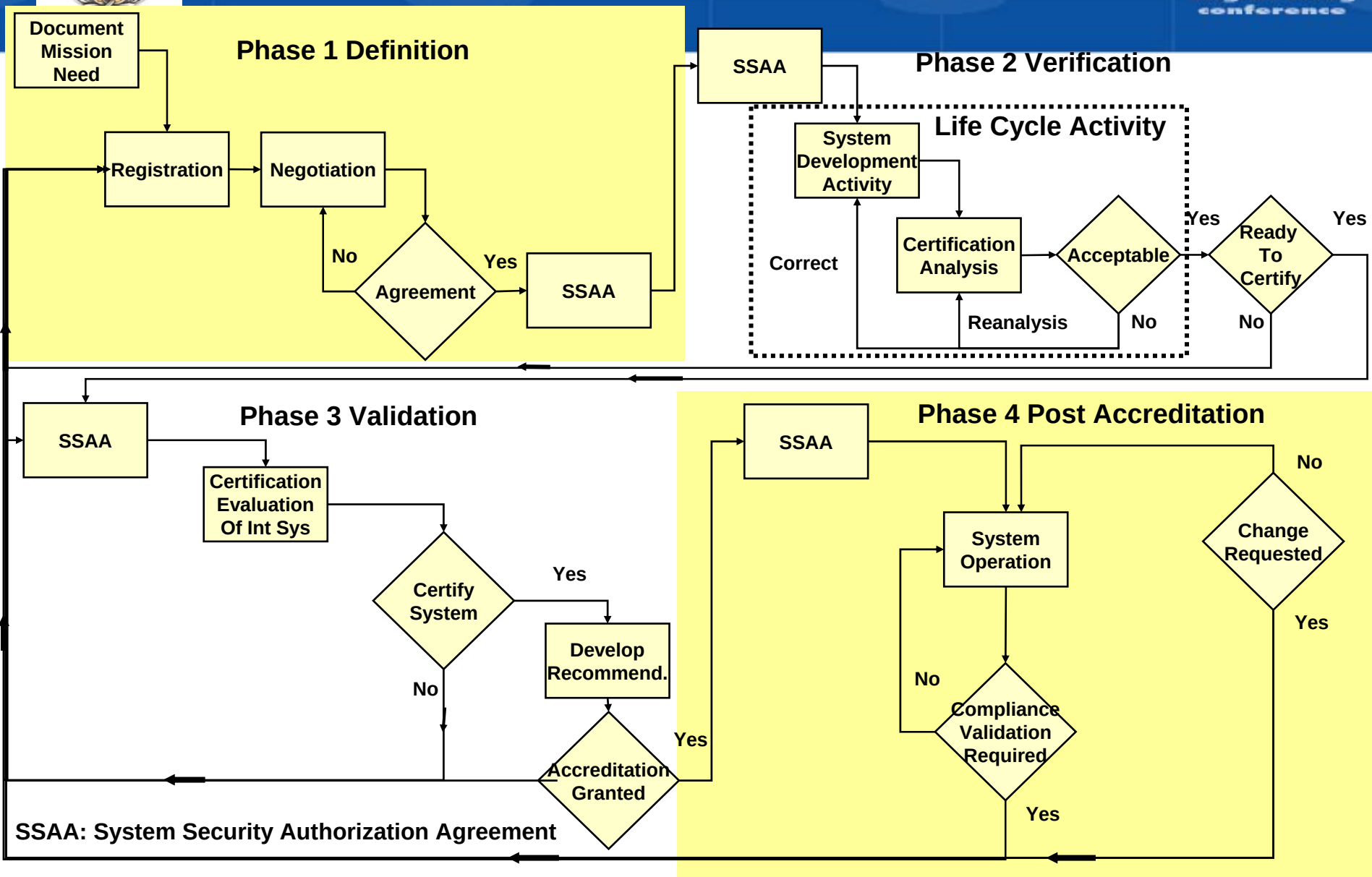
Data/Information:

- **Availability**
- **Integrity**
- **Authentication**
- **Confidentiality**
- **Non-repudiation**

INFORMATION ASSURANCE (IA): Information Operations that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation.

* DoD Information Technology Security Certification and Accreditation Process

Information Assurance Accreditation Flow Chart



Information Assurance Compliance Statement

- **Information assurance is an integral part of net readiness. This system is currently in full compliance with DOD Directive 8500.1 and DOD Instruction 8500.2, DOD Instruction 8500.40, DODI 5200.40, and has made the required Information Assurance documentation available to the Joint Staff J-6 for review.**